

Firmato digitalmente da

**GIUSEPPE
SPILOTRO**

O = ORDINE
DEGLI INGEGNERI
DI BARI
C = IT

"SERRA DEL CORVO"

Progetto di impianto di accumulo idroelettrico

Comune di Gravina in Puglia (BA)

COMMITTENTE



COORDINAMENTO / MANDANTE



GEOLOGIA / MANDATARIA



TITOLO ELABORATO

**Prove dilatometriche e pressiometriche
(allegato 6)**

SCALA

COMMESSA

1373

CODIFICA DOCUMENTO

1373-A-GE-D-06-0

4

3

2

1

0

PRIMA EMISSIONE

10/01/2022

10/01/2022

REV.

DESCRIZIONE

DATA

REDATTO

VERIFICATO

APPROVATO

Questo disegno non può essere riprodotto, nè utilizzato altrove, nè ceduto a terzi in tutto o in parte senza il consenso scritto degli autori



GEO TECNOLOGIE S.R.L.
Viale della Resistenza 48 G2 - Bari



IMPIANTO “SERRA DEL CORVO”

Impianto di accumulo idroelettrico mediante
pompaggio nel comune di Gravina in Puglia (BA)

Relazione geologica

ALLEGATO 6 – Prove dilatometriche e pressiometriche



GEO TECNOLOGIE S.R.L.

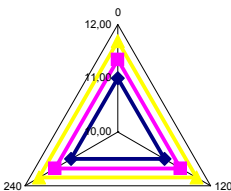
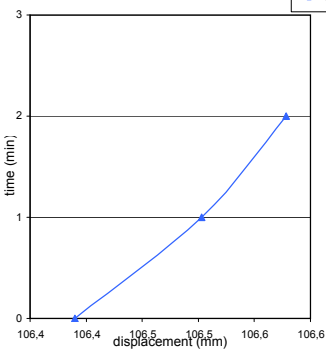
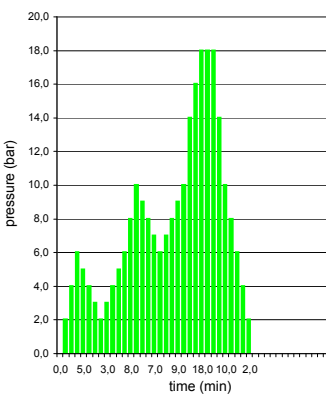
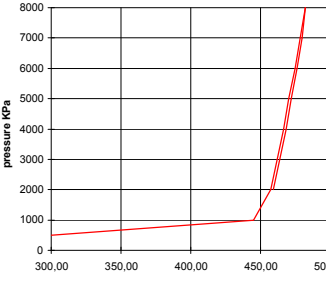
Prof. Giuseppe Spilotro

gennaio 2022

	borehole	S3	probe depth m	30,0	mod DVT REV3. 20 settembre 2020				
	Client:	FROSIO NEXT	job	2140	v. accept.	2140	code	1	
	Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT				
	site	GRAVINA DI PUGLIA	coordinates	EAST	NORTH	date	24.08.21	pag	1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

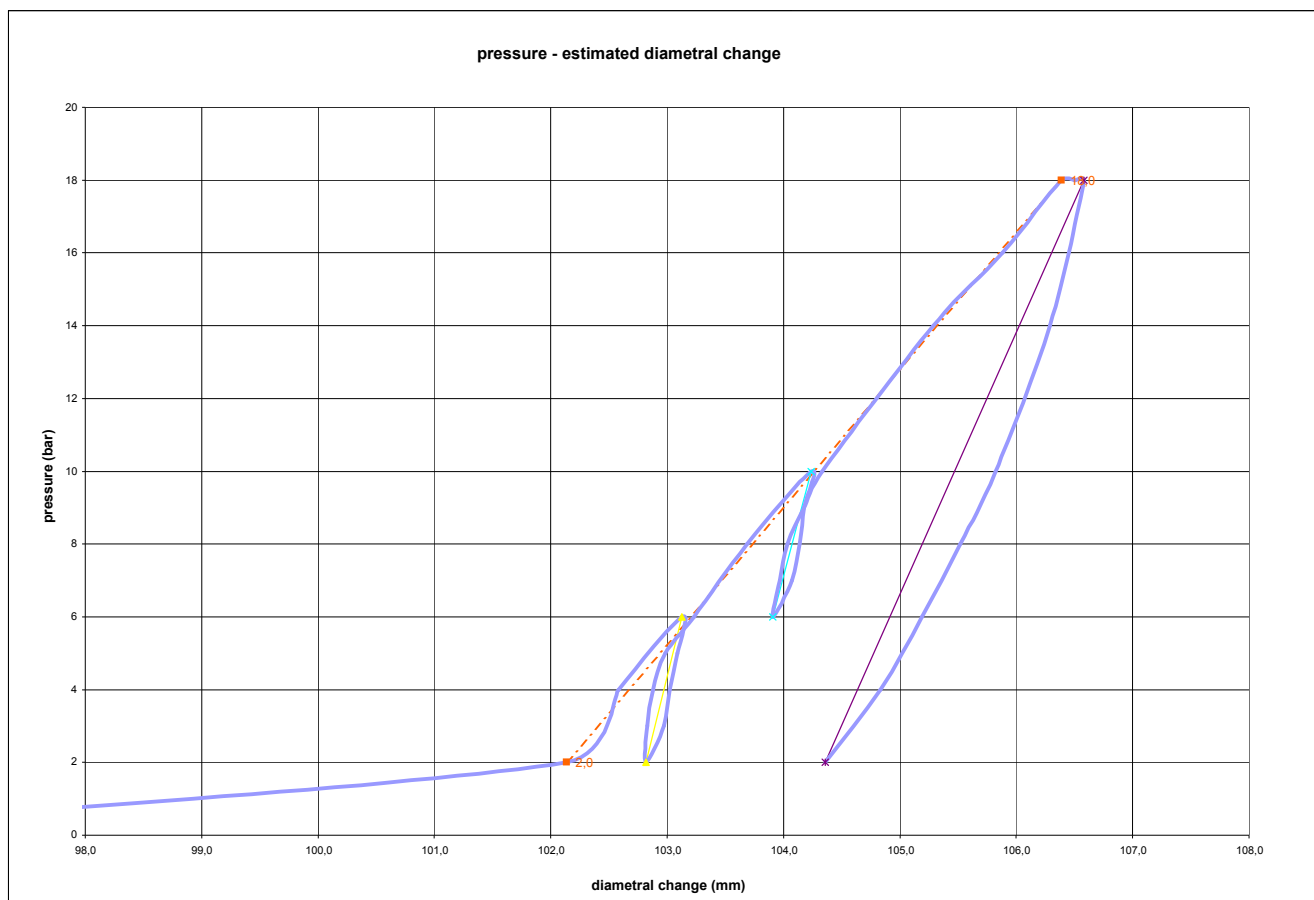
Borehole				S3			
test	1	real depth 30,0					
slope (degree)	90	core barrell C.SEMPLICE 101 MM					
Device: GEOANALISI VM02							
Orientation capteur		Standard method: ISRM 1987					
C1=							
Probe diam	95	Borehole diam	101				
Meteo	Temperatu re						
lithotype ARGILLE LIMOSE DA CONS. A MOLTO CONSISTENTE							
water table		18,0	POCKET PENETRO METER				
Temps mir	PBAR	MM					
0	18,00	106,39					
1	18,00	106,50					
2	18,00	106,58					
PROBE SCHEME							
							
rod adaptor							
electronic device							
double action piston							
expandable cylinder							
PROBE CALIBRATION							
probe							
membrane		CAUCCIU' ARMATO					
measure cell height (cm)		47,50					
V0 cell volume at rest (cmc)		3357					
lenght cable (mt)		100					
Volume initial Vi (cmc)		449					
diam calibration tube (cm)		10,1					
tube calibration volume cmc		3806					
Calibration in air							
coeff m		0,11 Kpa/cmc					
Confined calibration							
first load		3,98 cmc/Mpa					
unload		3.32 cmc/Mpa					

direction - displacement			
			
creep diagram			
			
pressure - time			
			
calibration			
			

PRESSURE	P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo
STEP	bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa
0	0,0	0	0,00	-7,115	0,000	94,870	0,000	0,0
1	2,0	435	533,98	0,000	1,873	102,136	7,267	8,6
2	4,0	627	567,96	0,436	1,761	102,581	7,712	64,1
3	6,0	819	609,93	0,971	1,640	103,128	8,259	52,2
4	5,0	721	606,95	0,933	1,648	103,090	8,220	376,1
5	4,0	623	601,96	0,870	1,661	103,025	8,155	224,6
6	3,0	526	597,97	0,819	1,672	102,973	8,103	280,9
7	2,0	429	585,98	0,666	1,707	102,817	7,947	92,4
8	3,0	527	586,97	0,679	1,704	102,829	7,960	1133,0
9	4,0	625	590,96	0,730	1,692	102,881	8,012	280,1
10	5,0	722	598,95	0,831	1,670	102,985	8,116	139,4
11	6,0	818	617,93	1,073	1,618	103,232	8,363	58,1
12	8,0	1010	652,91	1,517	1,532	103,686	8,816	63,6
13	10,0	1201	695,89	2,059	1,437	104,240	9,370	52,0
14	9,0	1104	690,90	1,997	1,447	104,176	9,306	229,6
15	8,0	1006	687,91	1,959	1,454	104,137	9,268	383,8
16	7,0	908	682,92	1,896	1,464	104,073	9,203	229,2
17	6,0	812	669,93	1,732	1,493	103,905	9,036	87,0
18	7,0	909	674,92	1,795	1,482	103,970	9,100	228,4
19	8,0	1007	679,91	1,858	1,471	104,034	9,164	228,7
20	9,0	1104	690,90	1,997	1,447	104,176	9,306	103,3
21	10,0	1200	702,89	2,147	1,423	104,330	9,460	94,8
22	14,0	1584	777,85	3,086	1,286	105,288	10,419	60,8
23	16,0	1775	824,82	3,670	1,212	105,885	11,015	49,0
24	18,0	1966	864,80	4,164	1,156	106,390	11,520	58,4
25	18,0	1965	873,80	4,275	1,144	106,503	11,634	-1,4
26	18,0	1965	879,80	4,349	1,137	106,579	11,709	-1,4
27	14,0	1575	856,85	4,066	1,167	106,289	11,420	208,0
28	10,0	1187	819,89	3,609	1,220	105,822	10,953	127,8
29	8,0	993	795,91	3,311	1,256	105,518	10,649	97,4
30	6,0	800	769,93	2,987	1,299	105,188	10,318	89,3
31	4,0	607	741,96	2,638	1,348	104,830	9,961	82,3
32	2,0	415	704,98	2,174	1,418	104,357	9,487	61,4
I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione								
FIELD LIMITS								
	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	2,0	434,9	534,0	0,0	1,9	102,1	7,3	primo
max	18,0	1966,5	864,8	4,2	1,2	106,4	11,5	carico
max	6,0	818,6	609,9	1,0	1,6	103,1	8,3	I
min	2,0	428,9	586,0	0,7	1,7	102,8	7,9	
max	10,0	1201,1	695,9	2,1	1,4	104,2	9,4	II
min	6,0	811,7	669,9	1,7	1,5	103,9	9,0	
max	18,0	1964,8	879,8	4,3	1,1	106,6	11,7	III
min	2,0	415,2	705,0	2,2	1,4	104,4	9,5	

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S3	probe depth m	30,0	code	1	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	24.08.21	pag	2/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

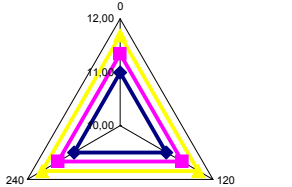
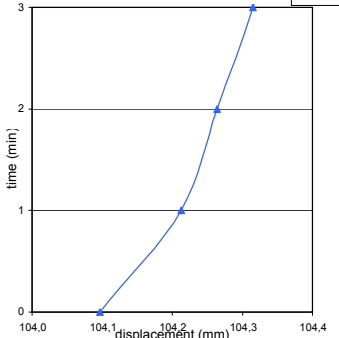
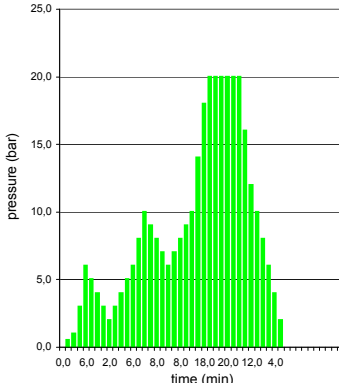
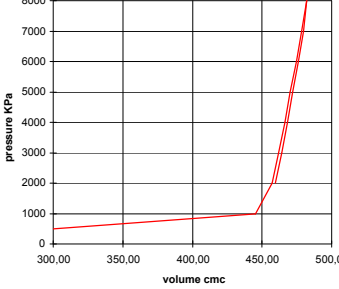


DATA PROCESSING				SENSOR 1			SENSOR 2		SENSOR 3		SENSOR AVE		
Legend: H = test depth W = water table depth v = Poisson ratio vo = cell initial volume do = cell initial diameter φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated εc = dR / Ro	DATA		ELASTICITY MODULUS Ei										
			loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)	
	symbol	datum	1	6.0	2.0							185	
	γsoil	2,0	2	10.0	6.0							173	
	W (ml)	30,0	3									103	
	v	0,45	4										
	vo (cmc)	3357	5										
	do (mm)	94,87	DEFORMATION MODULUS Ti										
	σv (kPa)	600	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)	
	height mt	0	1	6.0	2.0							57	
		2	10.0	6.0							51		
		3	18.0	10.0							48		
		4											
		5											
			GLOBAL DEFORMATION MODULUS EG										
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)
Ei = (1+ v) φ Pax - Pmin		Ey= (EII+EIII)/2			18.0	2.0							53
dmax - dmin		Ey= EIII		DIAMETER			F		F		F		F
				beginning diameter (mm)									102,136
DEFORMATION MODULUS Ti				final diameter (mm)									104,240
Ti = (1+ v) φ Pi - Pi-1				range mm									2,103
Xi - Xi-1				DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS						
		Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		435		EG (MPa)		53
GLOBAL DEFORMATION MODULUS EG		bar	0	120	240	0	Pf creep pressure (KPa)		1966		E (MPa)		103
EG = (1+ v) φ Pmax - Po		6.0	10,997	10,997	10,997	8,259	PL limit pres. (KPa) Cassan >		3049		E/PL		20,28
dmax - do		10.0	11,342	11,342	11,342	9,370	PL' net limit pres (KPa) >		2629		EG/Ey		0,52
CLASTI INFERIORI A CAROTIERE 101 O ALESATI		18.0	11,692	11,692	11,692	11,709	Ko lateral coeff at rest (KPa)		0,70		cu coesion (KPa) johnson		330
							Pho lateral pressure (KPa)		420		φ friction angle (°)		

	borehole	S3	probe depth m	40,0	mod DVT REV3. 20 settembre 2020				
	Client:	FROSIO NEXT	job	2140	v. accept.	2140	code	2	
	Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT				
	site	GRAVINA DI PUGLIA	coordinates	EAST	NORTH	date	24.08.21	pag	1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole				S3			
test		2		real depth		40,0	
slope (degree)		90		core barrell		C.SEMPLICE 101 MM	
Device:				GEOANALISI VM02			
Orientation capteur		C1=		Standard method:		ISRM 1987	
Probe diam		95		Borehole diam		101	
Meteo				Temperatu re			
lithotype				ARGILLA LIMOSA			
water table		18,0		POCKET PENETRO METER			
Temps mir		PBAR		MM			
0		20,00		104,10			
1		20,00		104,21			
2		20,00		104,26			
3		20,00		104,32			
4		20,00		104,35			
5		20,00		104,38			
PROBE SCHEME							
							
rod adaptor							
electronic device							
double action piston							
expandable cylinder							
PROBE CALIBRATION							
probe							
membrane CAUCIU' ARMATO							
measure cell height (cm)		47,50					
V0 cell volume at rest (cmc)		3357					
lenght cable (mt)		100					
Volume initial Vi (cmc)		449					
diam calibration tube (cm)		10,1					
tube calibration volume cmc		3806					
Calibration in air							
coeff m		0,11		Kpa/cmc			
Confined calibration							
first load		3,98		cmc/Mpa			
unload		3.32		cmc/Moa			

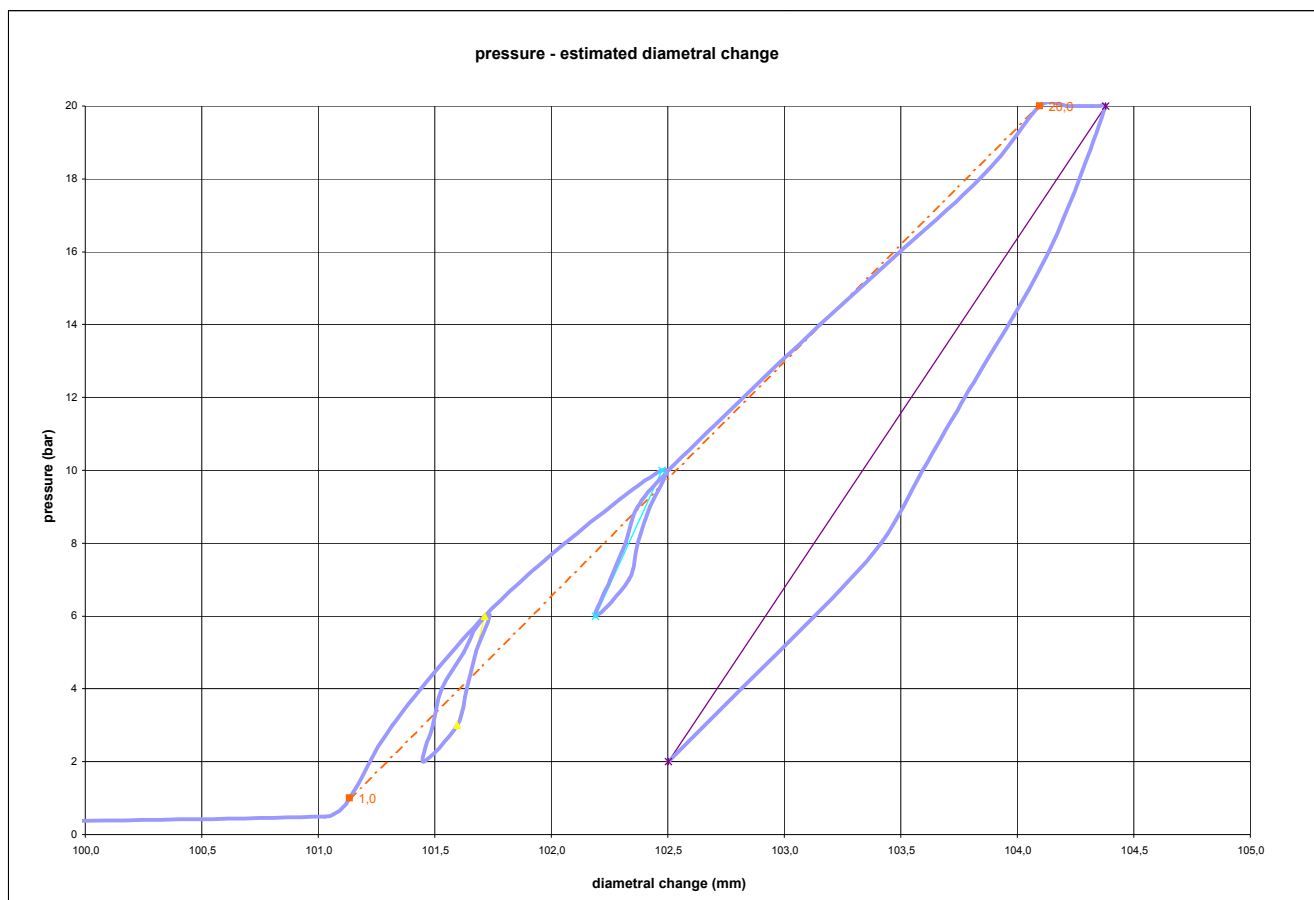
direction - displacement			
			
creep diagram			
			
pressure - time			
			
calibration			
			

PRESSURE				P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo
STEP				bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa
0				0,0	0	0,00	-6,194	0,000	94,870	0,000	0,0
1				0,5	397	449,99	-0,105	2,222	101,028	6,159	9,2
2				1,0	446	457,99	0,000	2,183	101,134	6,265	66,5
3				3,0	640	471,97	0,183	2,119	101,319	6,450	154,3
4				6,0	931	501,93	0,574	1,992	101,715	6,845	108,2
5				5,0	833	498,95	0,535	2,004	101,676	6,806	365,9
6				4,0	735	495,96	0,496	2,016	101,636	6,767	365,6
7				3,0	638	492,97	0,457	2,029	101,597	6,727	365,3
8				2,0	541	481,98	0,314	2,075	101,452	6,582	98,2
9				3,0	639	484,97	0,353	2,062	101,491	6,621	364,3
10				4,0	736	487,96	0,392	2,049	101,531	6,661	364,5
11				5,0	834	494,95	0,483	2,020	101,623	6,753	155,4
12				6,0	931	501,93	0,574	1,992	101,715	6,845	155,7
13				8,0	1124	527,91	0,912	1,894	102,057	7,187	83,5
14				10,0	1317	559,89	1,327	1,786	102,476	7,606	68,1
15				9,0	1219	555,90	1,275	1,799	102,424	7,554	277,9
16				8,0	1121	551,91	1,223	1,812	102,371	7,502	277,6
17				7,0	1024	548,92	1,185	1,822	102,332	7,463	370,6
18				6,0	927	537,93	1,042	1,859	102,188	7,319	99,7
19				7,0	1024	542,92	1,107	1,842	102,254	7,384	220,9
20				8,0	1122	547,91	1,172	1,825	102,319	7,450	221,2
21				9,0	1220	551,90	1,223	1,812	102,371	7,502	277,3
22				10,0	1316	561,89	1,353	1,780	102,502	7,632	110,2
23				14,0	1703	611,85	1,997	1,634	103,153	8,284	88,5
24				18,0	2089	664,80	2,675	1,504	103,839	8,970	84,5
25				20,0	2283	684,78	2,929	1,460	104,097	9,227	113,5
26				20,0	2282	693,78	3,044	1,441	104,213	9,343	-1,3
27				20,0	2282	697,78	3,095	1,433	104,264	9,394	-1,3
28				20,0	2281	701,78	3,146	1,425	104,315	9,446	-1,4
29				20,0	2281	704,78	3,184	1,419	104,354	9,484	-1,4
30				20,0	2281	706,78	3,209	1,415	104,380	9,510	-1,4
31				16,0	1891	687,82	2,968	1,454	104,136	9,266	242,0
32				12,0	1501	659,87	2,612	1,515	103,775	8,906	162,7
33				10,0	1307	645,89	2,433	1,548	103,595	8,725	161,9
34				8,0	1112	631,91	2,254	1,582	103,414	8,544	161,3
35				6,0	919	609,93	1,972	1,640	103,128	8,259	101,7
36				4,0	725	585,96	1,663	1,707	102,816	7,947	92,5
37				2,0	532	561,98	1,354	1,779	102,503	7,634	92,0

I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione											
FIELD LIMITS											
		P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop		
min		1,0	445,5	458,0	0,0	2,2	101,1	6,3	primo		
max		20,0	2283,3	684,8	2,9	1,5	104,1	9,2	carico		
max		6,0	931,0	501,9	0,6	2,0	101,7	6,8	I		
min		3,0	637,7	493,0	0,5	2,0	101,6	6,7			
max		10,0	1316,7	559,9	1,3	1,8	102,5	7,6	II		
min		6,0	926,8	537,9	1,0	1,9	102,2	7,3			
max		20,0	2280,8	706,8	3,2	1,4	104,4	9,5	III		
min		2,0	531,7	562,0	1,4	1,8	102,5	7,6			

	DILATOMETRIC ROCK TEST DRT		mod DVT REV3. 20 settembre 2020				
	borehole	S3	probe depth m	40,0	code	2	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	24.08.21	pag	2/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



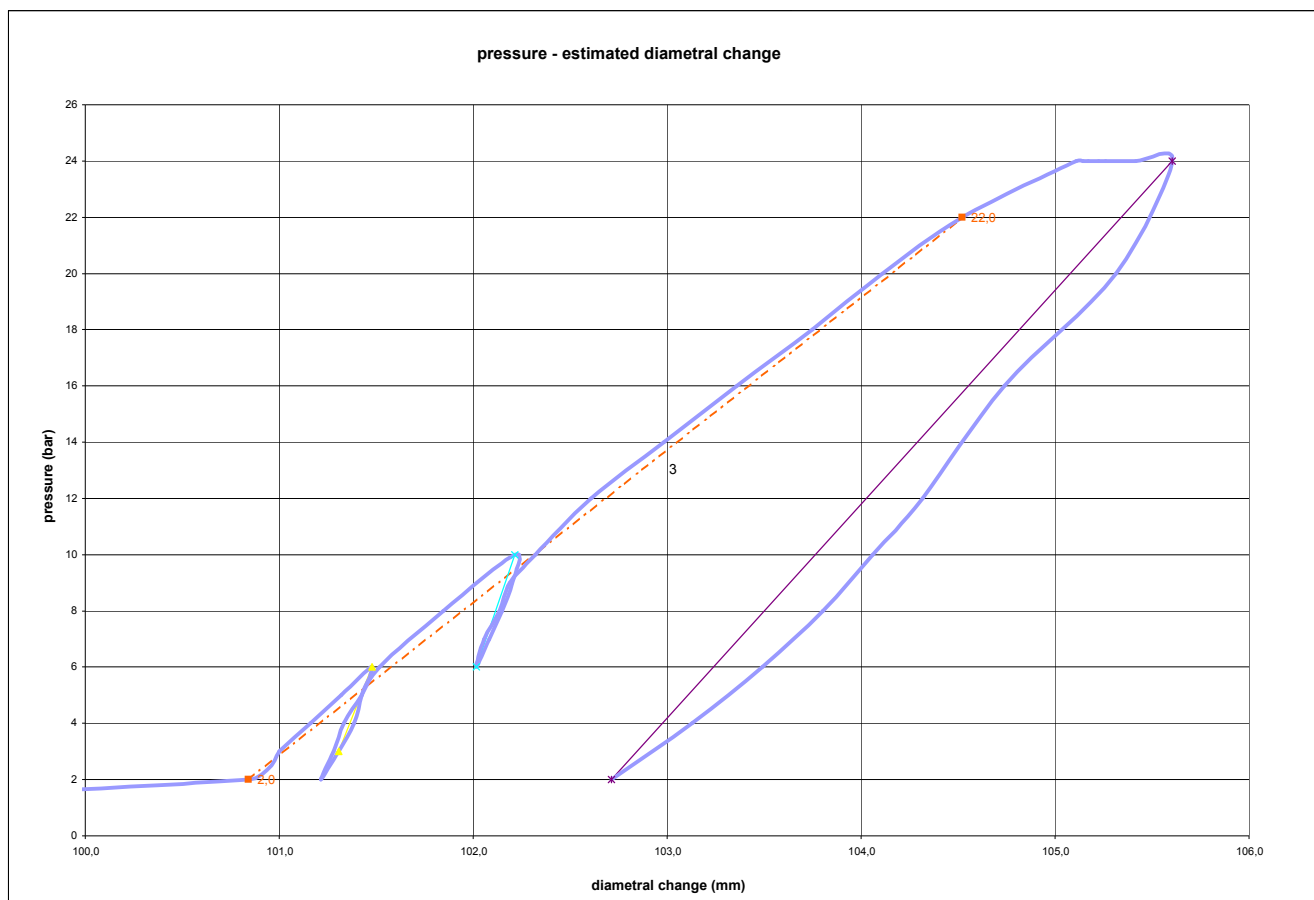
DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE				
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated $\epsilon_c = dR / R_o$				ELASTICITY MODULUS Ei													
				loop		Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)			
				symbol	datum	1	6.0	3.0							364		
				γsoil	2,0	2	10,0	6,0							199		
				W (ml)	40,0	3	20,0	2,0							137		
				v	0,45	4											
				vo (cmc)	3357	5											
				do (mm)	94,87	DEFORMATION MODULUS Ti											
				σv (kPa)	800	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)		
				height mt	0	1	6.0	1.0							123		
				2	10,0	6,0					74						
				3	20,0	10,0					74						
				4													
				5													
				GLOBAL DEFORMATION MODULUS EG													
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)				
Ei = (1+ ν) Φ Pax - Pmin		Ey= (EII+EIIII)/2			20,0	1,0							91				
dmax - dmin		Ey= EIIII		DIAMETER			F		F		F		F				
				beginning diameter (mm)									101,134				
DEFORMATION MODULUS Ti				final diameter (mm)									102,476				
Ti = (1+ ν) Φ Pi - Pi-1				range mm									1,342				
Xi - Xi-1				DM loop minimum displacement				DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS									
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		446	EG (MPa)		91			
GLOBAL DEFORMATION MODULUS EG				bar	0	120	240	0	Pf creep pressure (KPa)		2283	E (MPa)		137			
EG = (1+ ν) Φ Pmax - Po				6,0	10,997	10,997	10,997	6,845	PL limit pres. (KPa) Cassan >		3490	E/PL		31,05			
dmax - do				10,0	11,342	11,342	11,342	7,606	PL' net limit pres (KPa) >		2930	EG/Ey		0,67			
				20,0	11,692	11,692	11,692	9,510	Ko lateral coeff at rest (KPa)		0,70	cu coesion (KPa) johnson		374			
									Pho lateral pressure (KPa)		560	φ friction anole (°)					

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

[illegible]

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S3	probe depth m	50,0	code	3	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	24.08.21	pag	2/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



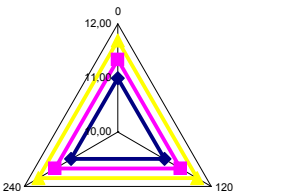
DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE						
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro ELASTICITY MODULUS Ei Ei = (1+ ν) Φ Pax - Pmin dmax - dmin DEFORMATION MODULUS Ti Ti = (1+ ν) Φ Pi - Pi-1 Xi - Xi-1 GLOBAL DEFORMATION MODULUS EG EG = (1+ ν) Φ Pmax - Po dmax - do				DATA				ELASTICITY MODULUS Ei											
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)						
				symbol	datum	1	6.0	3.0					250						
				γsoil	2,0	2	10,0	6,0					291						
				W (ml)	50,0	3	24,0	2,0					108						
				ν	0,45	4													
				vo (cmc)	3357	5													
				do (mm)	94,87	DEFORMATION MODULUS Ti													
				σv (kPa)	1000	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)				
				height mt	0	1	6.0	2.0							89				
						2	10,0	6,0							77				
						3	24,0	10,0							58				
						4													
						5													
				GLOBAL DEFORMATION MODULUS EG															
				ELASTICITY MODULUS Ey estimated				Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)			
								22,0	2,0							77			
				DIAMETER						F		F		F		F			
						begining diameter (mm)										100,842			
						final diameter (mm)										102,214			
				DEFORMATION MODULUS Ti		range mm										1,372			
						DM loop minimum displacement					DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS								
				GLOBAL DEFORMATION MODULUS EG		Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		646	EG (MPa)		77			
						bar	0	120	240	0	Pf creep pressure (KPa)		2576	E (MPa)		108			
						6,0	10,997	10,997	10,997	6,608	PL limit pres. (KPa) Cassan >		3889	E/PL		24,05			
						10,0	11,342	11,342	11,342	7,344	PL' net limit pres (KPa) >		3189	EG/Ey		0,71			
						24,0	11,692	11,692	11,692	10,735	Ko lateral coeff at rest (KPa)		0,70	cu coesion (KPa) johnson		414			
											Pho lateral pressure (KPa)		700	▲ friction anole (°)					

	borehole	S3	probe depth m	60,0	mod DVT REV3. 20 settembre 2020				
	Client:	FROSIO NEXT	job	2140	v. accept.	2140	code	4	
	Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT				
	site	GRAVINA DI PUGLIA	coordinates	EAST	NORTH	date	25.08.21	pag	1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

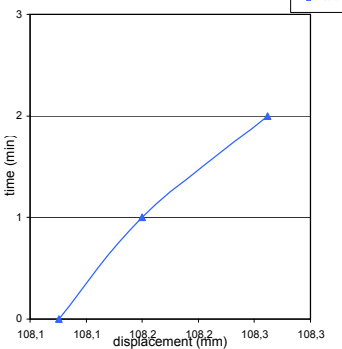
Borehole				S3			
test		4	real depth		60,0		
slope (degree)		90		core barrell		C.SEMPLICE 101 MM	
Device:				GEOANALISI VM02			
Orientation capteur		C1=		Standard method:		ISRM 1987	
Probe diam		90 MM		Borehole diam		101	
Meteo				Temperatu re			
lithotype				ARGILLA			
water table		48,0		POCKET PENETRO METER			
Temps mir		PBAR	MM				
0		30,00	108,08				
1		30,00	108,15				
2		30,00	108,26				
PROBE SCHEME							
							
rod adaptor							
electronic device							
double action piston							
expandable cylinder							
PROBE CALIBRATION							
probe							
membrane				CAUCCIU' ARMATO			
measure cell height (cm)		47,50					
V0 cell volume at rest (cmc)		3357					
lenght cable (mt)		100					
Volume initial Vi (cmc)		449					
diam calibration tube (cm)		10,1					
tube calibration volume cmc		3806					
Calibration in air							
coeff m		0,11		Kpa/cmc			
Confined calibration							
first load		3,98		cmc/Mpa			
unload		3,32		cmc/Moa			

direction - displacement

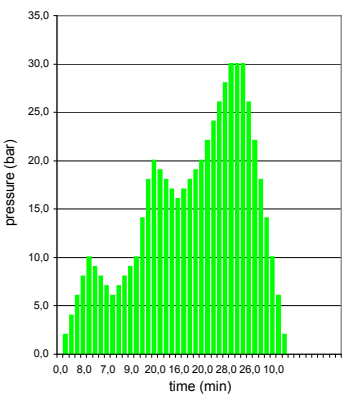


PRESSURE		P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo
STEP		bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa
0		0,0	0	0,00	-7,329	0,000	94,870	0,000	0,0
1		2,0	733	551,98	0,000	1,812	102,372	7,503	14,0
2		4,0	926	576,96	0,319	1,733	102,699	7,829	88,0
3		6,0	1119	605,93	0,688	1,650	103,076	8,207	76,2
4		8,0	1312	629,91	0,992	1,588	103,388	8,518	93,0
5		10,0	1505	661,89	1,396	1,511	103,802	8,932	69,9
6		9,0	1407	660,90	1,384	1,513	103,789	8,919	1154,6
7		8,0	1309	658,91	1,359	1,518	103,763	8,894	573,2
8		7,0	1211	656,92	1,333	1,522	103,737	8,868	572,9
9		6,0	1114	649,93	1,245	1,539	103,647	8,777	161,9
10		7,0	1212	650,92	1,258	1,536	103,660	8,790	1151,4
11		8,0	1309	656,91	1,333	1,522	103,737	8,868	189,2
12		9,0	1406	665,90	1,447	1,502	103,853	8,984	125,8
13		10,0	1504	673,89	1,547	1,484	103,956	9,087	142,1
14		14,0	1890	723,85	2,175	1,382	104,599	9,729	91,0
15		18,0	2277	771,80	2,773	1,296	105,211	10,342	96,0
16		20,0	2470	801,78	3,146	1,247	105,593	10,723	77,3
17		19,0	2372	803,79	3,171	1,244	105,618	10,749	-589,9
18		18,0	2274	797,80	3,096	1,253	105,542	10,673	196,1
19		17,0	2177	793,81	3,047	1,260	105,491	10,622	294,8
20		16,0	2079	791,82	3,022	1,263	105,466	10,597	592,2
21		17,0	2176	799,81	3,121	1,250	105,568	10,698	146,5
22		18,0	2273	803,80	3,171	1,244	105,618	10,749	295,2
23		19,0	2371	809,79	3,245	1,235	105,694	10,825	196,4
24		20,0	2468	817,78	3,344	1,223	105,796	10,926	147,1
25		22,0	2661	844,76	3,677	1,184	106,137	11,267	86,9
26		24,0	2854	873,74	4,034	1,145	106,502	11,633	81,4
27		26,0	3046	910,71	4,488	1,098	106,967	12,097	64,0
28		28,0	3238	949,69	4,964	1,053	107,454	12,584	61,2
29		30,0	3428	999,67	5,571	1,000	108,076	13,206	47,9
30		30,0	3427	1005,67	5,644	0,994	108,150	13,281	-1,5
31		30,0	3426	1014,67	5,753	0,986	108,262	13,392	-1,5
32		26,0	3036	994,71	5,511	1,005	108,014	13,145	247,3
33		22,0	2646	975,76	5,281	1,025	107,779	12,909	259,2
34		18,0	2256	953,80	5,014	1,048	107,505	12,636	222,6
35		14,0	1867	924,85	4,661	1,081	107,144	12,274	167,4
36		10,0	1479	887,89	4,208	1,126	106,680	11,811	129,9
37		6,0	1091	845,93	3,692	1,182	106,152	11,282	113,2
38		2,0	704	799,98	3,123	1,250	105,570	10,700	102,1

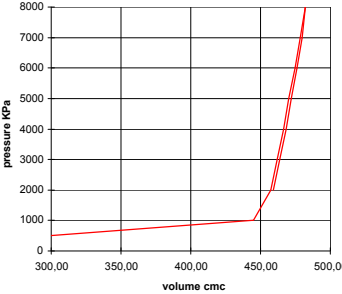
creep diagram



pressure - time



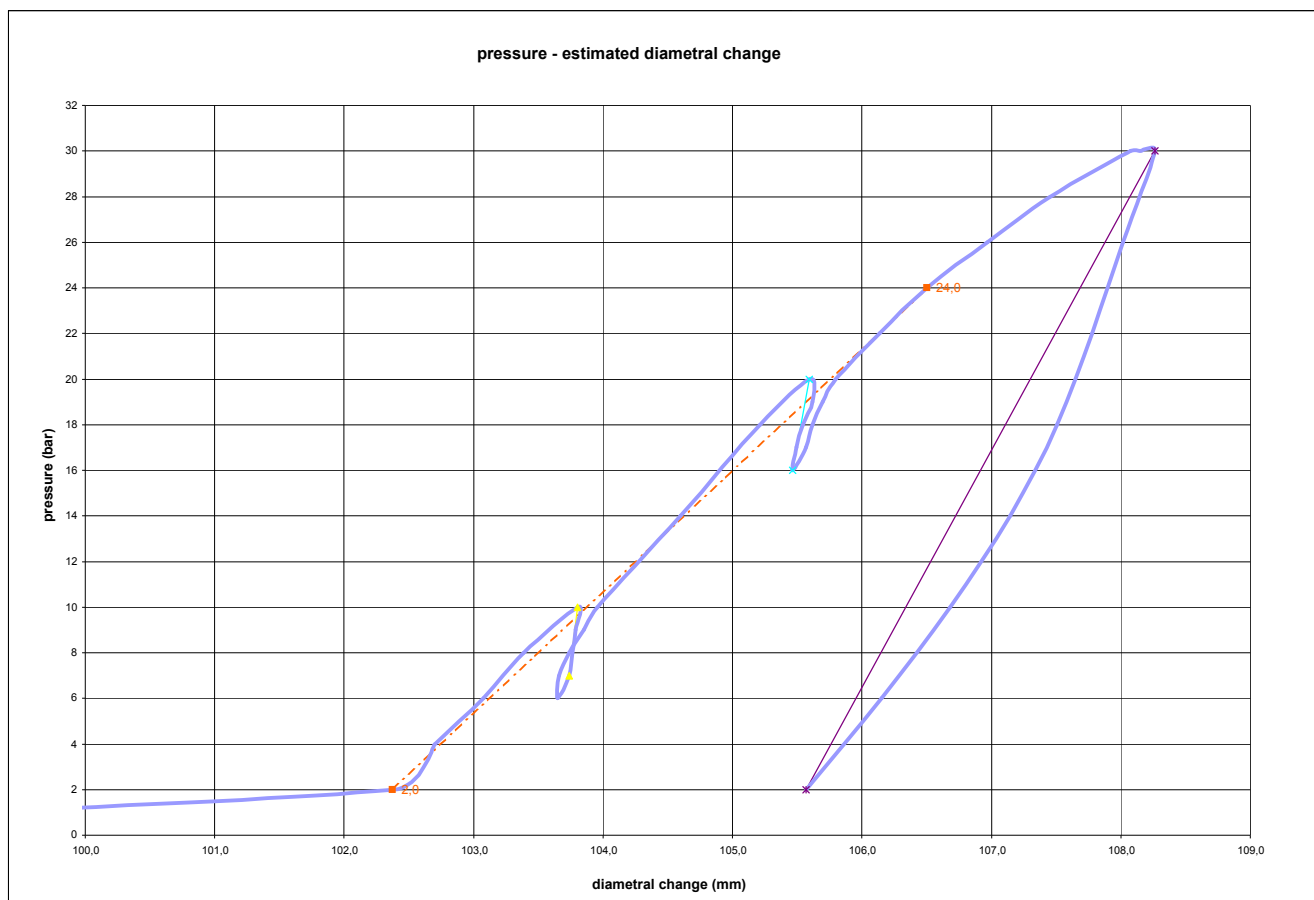
calibration



I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione									
FIELD LIMITS									
	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop	
min	2,0	732,8	552,0	0,0	1,8	102,4	7,5	primo	
max	24,0	2854,0	873,7	4,0	1,1	106,5	11,6	carico	
max	10,0	1505,0	661,9	1,4	1,5	103,8	8,9	I	
min	7,0	1211,3	656,9	1,3	1,5	103,7	8,9		
max	20,0	2469,9	801,8	3,1	1,2	105,6	10,7	II	
min	16,0	2078,7	791,8	3,0	1,3	105,5	10,6		
max	30,0	3426,5	1014,7	5,8	1,0	108,3	13,4	III	
min	2,0	704,3	800,0	3,1	1,3	105,6	10,7		

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S3	probe depth m	60,0	code	4	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	25.08.21	pag	2/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DATA PROCESSING				SENSOR 1			SENSOR 2		SENSOR 3		SENSOR AVE					
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do = cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro ELASTICITY MODULUS Ei ELASTICITY MODULUS Ey estimated Ei = (1+ ν) Φ Pax - Pmin Ey= (EII+EIII)/2 dmax - dmin Ey= EIIII DEFORMATION MODULUS Ti Ti = (1+ ν) Φ Pi - Pi-1 Xi - Xi-1				ELASTICITY MODULUS Ei												
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)			
				symbol	datum	1	10,0	7,0					680			
				γsoil	2,0	2	20,0	16,0					459			
				W (ml)	60,0	3	30,0	2,0					150			
				ν	0,45	4										
				vo (cmc)	3357	5										
				do (mm)	94,87	DEFORMATION MODULUS Ti										
				σv (kPa)	1200	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)	
				height mt	0	1	10,0	2,0							80	
						2	20,0	10,0							80	
						3	30,0	20,0							53	
						4										
						5										
				GLOBAL DEFORMATION MODULUS EG												
							Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)	
							24,0	2,0							76	
						DIAMETER			F		F		F		F	
						beginning diameter (mm)									102,372	
						final diameter (mm)									105,593	
						range mm									3,220	
						DM loop minimum displacement				DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS						
						Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		733	EG (MPa)		76
						bar	0	120	240	0	Pf creep pressure (KPa)		2854	E (MPa)		150
						10,0	10,997	10,997	10,997	8,932	PL limit pres. (KPa) Cassan >		4264	E/PL		22,27
						20,0	11,342	11,342	11,342	10,723	PL' net limit pres (KPa) >		3424	EG/Ey		0,51
				CLASTI INFERIORI A CAROTIERE 101 O ALESATI		30,0	11,692	11,692	11,692	13,392	Ko lateral coeff at rest (KPa)		0,70	cu coesion (KPa) johnson		451
											Pho lateral pressure (KPa)		840	φ friction angle (°)		



DILATOMETRIC ROCK TEST DRT

mod DVT REV3. 20 settembre 2020

borehole

S3

probe depth m

60,0

code

4

Client:

FROSIO NEXT

job

2140

v. accept.

2140

Project

IMPIANTO SERRA DEL CORVO

report

2140

DRT

site

GRAVINA DI PUGLIA

coordinates

EAST

NORTH

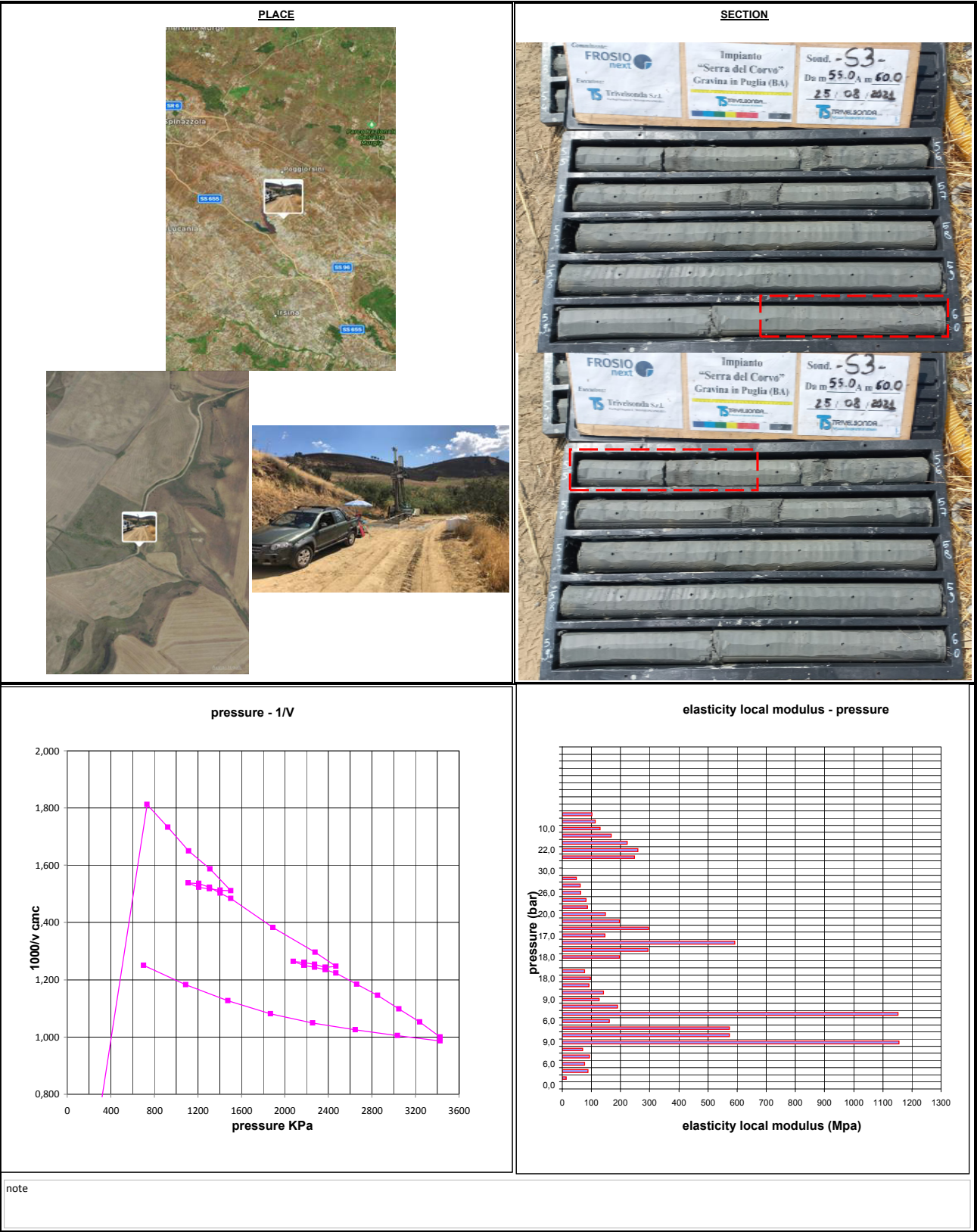
date

25.08.21

pag

3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



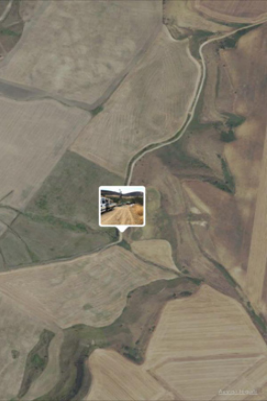
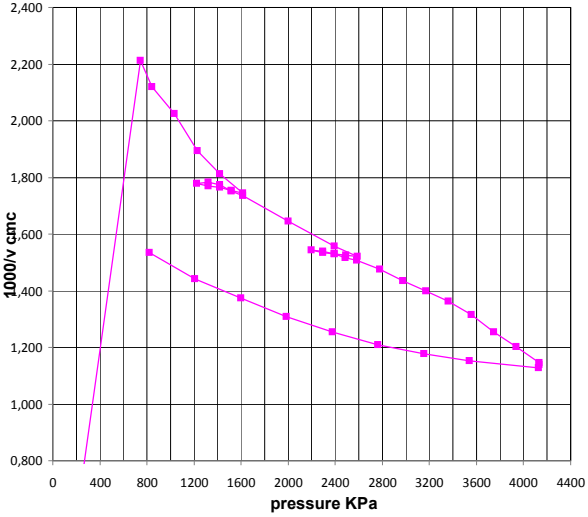
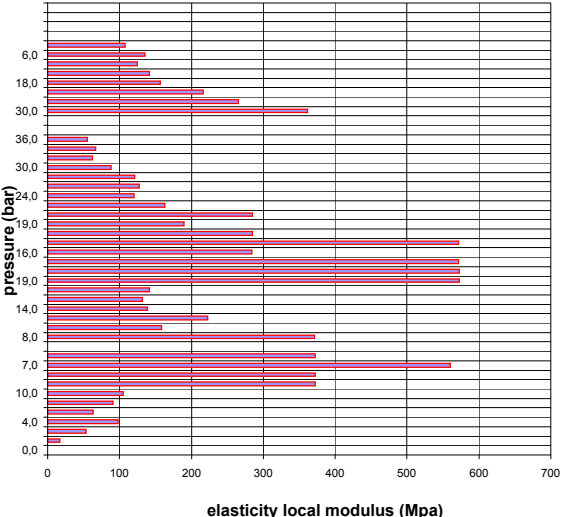
	borehole S3		probe depth m 70,0		mod DVT REV3. 20 settembre 2020	
	Client: FROSIO NEXT		job	2140	v. accept.	2140
	Project IMPIANTO SERRA DEL CORLO		report 2140		DRT	
	site GRAVINA DI PUGLIA		coordinates	EAST	date	25.08.21
			NORTH	pag	1/3	

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole				S3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
----------	--	--	--	----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020	
	borehole	S3	probe depth m	70,0	code	5
	Client:	FROSIO NEXT		job	2140	v. accept. 2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT
site	GRAVINA DI PUGLIA	coordinates	EAST	date	25.08.21	pag 3/3
			NORTH			

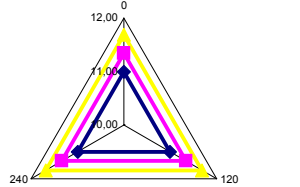
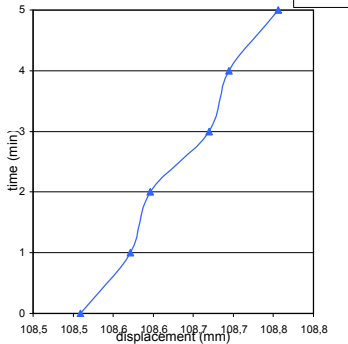
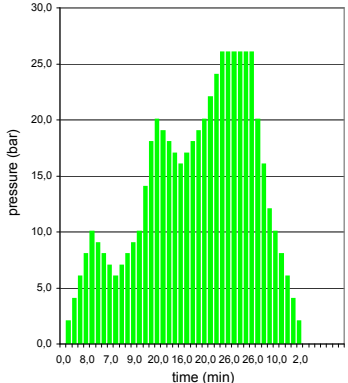
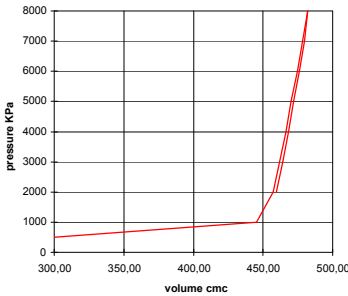
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

PLACE   	SECTION 
pressure - 1/V 	elasticity local modulus - pressure 
note	

	borehole	S3	probe depth m	80,0	code	5
	Client:	FROSIO NEXT	job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
	site	GRAVINA DI PUGLIA	coordinates	EAST	NORTH	
	date	27.08.21	pag	1/3		

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

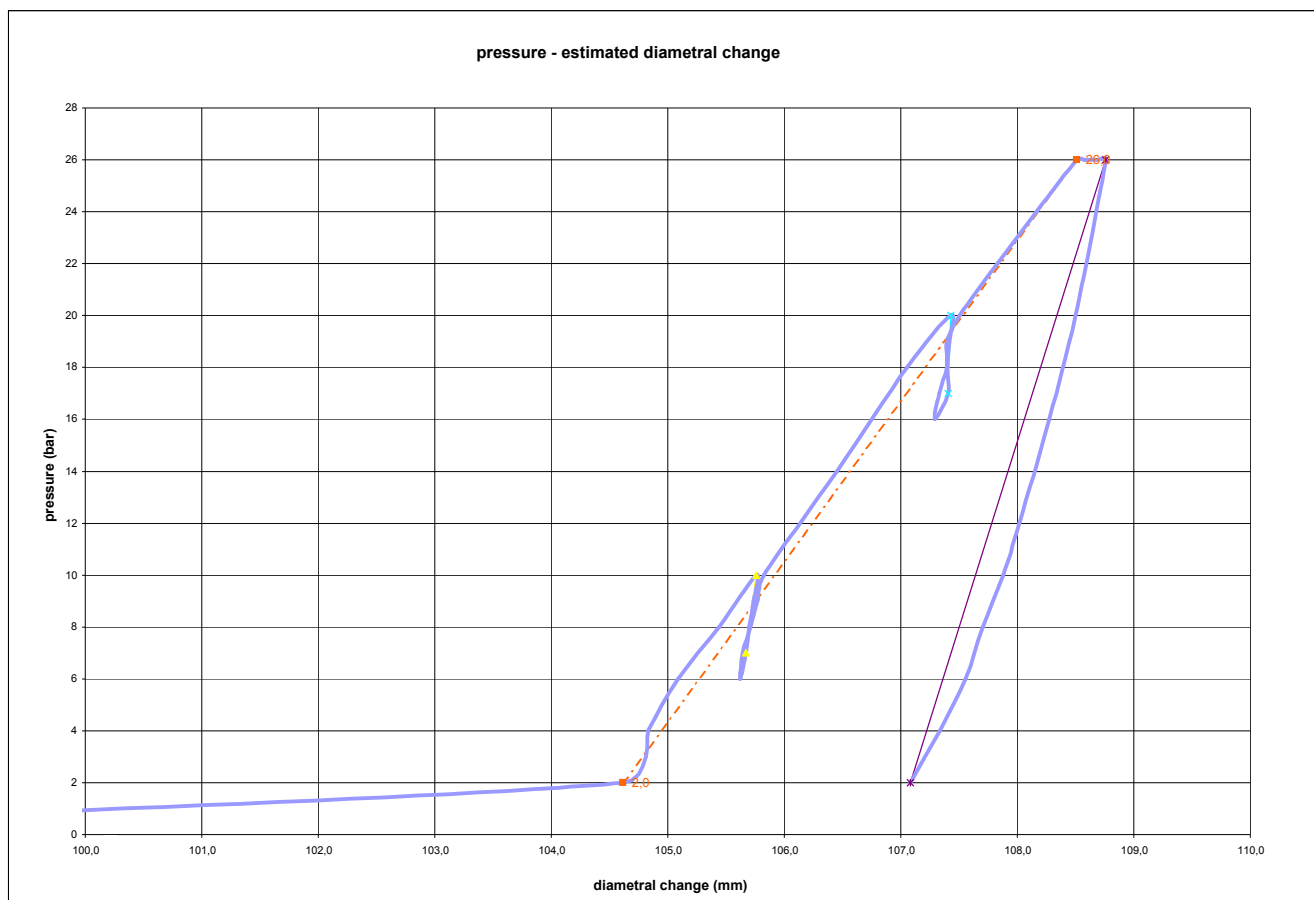
Borehole				S3			
test		5	real depth		80,0		
slope (degree)		90		core barrel		C.SEMPLICE 101 MM	
Device:				GEOANALISI VM02			
Orientation capteur		C1=		Standard method:		ISRM 1987	
Probe diam		90 MM		Borehole diam		101	
Meteo				Temperatu re			
lithotype				ARGILLA			
water table		85,0		POCKET PENETRO METER			
Temps mir		PBAR	MM				
0	26,00	108,51					
1	26,00	108,57					
2	26,00	108,60					
3	26,00	108,67					
4	26,00	108,69					
5	26,00	108,76					
PROBE SCHEME							
							
rod adaptor							
electronic device							
double action piston							
expandable cylinder							
PROBE CALIBRATION							
probe							
membrane CAUCIU' ARMATO							
measure cell height (cm)		47,50					
V0 cell volume at rest (cmc)		3357					
lenght cable (mt)		100					
Volume initial Vi (cmc)		449					
diam calibration tube (cm)		10,1					
tube calibration volume cmc		3806					
Calibration in air							
coeff m		0,11		Kpa/cmc			
Confined calibration							
first load		3,98		cmc/Mpa			
unload		3,32		cmc/Moa			

direction - displacement			
			
creep diagram			
			
pressure - time			
			
calibration			
			

PRESSURE		P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo
STEP	bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa	
0	0,0	0	0,00	-9,314	0,000	94,870	0,000	0,0	
1	2,0	913	724,98	0,000	1,379	104,613	9,744	13,6	
2	4,0	1107	741,96	0,208	1,348	104,830	9,961	135,7	
3	6,0	1301	761,93	0,452	1,312	105,086	10,216	115,7	
4	8,0	1494	789,91	0,792	1,266	105,442	10,572	82,7	
5	10,0	1687	814,89	1,095	1,227	105,759	10,889	93,4	
6	9,0	1590	812,90	1,071	1,230	105,734	10,864	595,2	
7	8,0	1492	809,91	1,035	1,235	105,696	10,826	395,4	
8	7,0	1394	807,92	1,011	1,238	105,671	10,801	594,5	
9	6,0	1296	803,93	0,962	1,244	105,620	10,750	295,5	
10	7,0	1394	805,92	0,987	1,241	105,645	10,776	593,9	
11	8,0	1492	810,91	1,047	1,233	105,709	10,839	236,1	
12	9,0	1589	815,90	1,108	1,226	105,772	10,902	236,4	
13	10,0	1687	819,89	1,156	1,220	105,822	10,953	296,4	
14	14,0	2074	869,85	1,759	1,150	106,453	11,584	94,3	
15	18,0	2460	917,80	2,335	1,090	107,055	12,186	99,5	
16	20,0	2653	947,78	2,693	1,055	107,430	12,561	80,0	
17	19,0	2555	946,79	2,681	1,056	107,418	12,548	1236,7	
18	18,0	2457	944,80	2,657	1,058	107,393	12,523	614,0	
19	17,0	2359	945,81	2,669	1,057	107,406	12,536	-1212,1	
20	16,0	2262	936,82	2,562	1,067	107,293	12,424	134,6	
21	17,0	2360	939,81	2,598	1,064	107,331	12,461	407,4	
22	18,0	2457	944,80	2,657	1,058	107,393	12,523	243,7	
23	19,0	2555	944,79	2,657	1,058	107,393	12,523	-111257,0	
24	20,0	2652	953,78	2,764	1,048	107,505	12,635	134,9	
25	22,0	2846	979,76	3,074	1,021	107,828	12,959	93,3	
26	24,0	3039	1006,74	3,394	0,993	108,163	13,294	90,3	
27	26,0	3232	1034,71	3,725	0,966	108,510	13,640	87,6	
28	26,0	3231	1039,71	3,784	0,962	108,571	13,702	-1,5	
29	26,0	3231	1041,71	3,807	0,960	108,596	13,726	-1,5	
30	26,0	3230	1047,71	3,878	0,954	108,670	13,800	-1,5	
31	26,0	3230	1049,71	3,902	0,953	108,695	13,825	-1,5	
32	26,0	3229	1054,71	3,960	0,948	108,756	13,887	-1,5	
33	20,0	2643	1033,78	3,714	0,967	108,498	13,628	357,4	
34	16,0	2253	1015,82	3,501	0,984	108,276	13,406	276,2	
35	12,0	1863	994,87	3,253	1,005	108,016	13,147	235,4	
36	10,0	1668	983,89	3,123	1,016	107,880	13,010	223,8	
37	8,0	1473	969,91	2,956	1,031	107,706	12,836	175,0	
38	6,0	1279	957,93	2,814	1,044	107,557	12,687	203,8	
39	4,0	1084	939,96	2,599	1,064	107,333	12,463	134,8	
40	2,0	891	919,98	2,361	1,087	107,083	12,213	120,7	
I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione									
FIELD LIMITS									
	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop	
min	2,0	913,0	725,0	0,0	1,4	104,6	9,7	primo	
max	26,0	3231,8	1034,7	3,7	1,0	108,5	13,6	carico	
max	10,0	1687,4	814,9	1,1	1,2	105,8	10,9	I	
min	7,0	1393,9	807,9	1,0	1,2	105,7	10,8		
max	20,0	2653,1	947,8	2,7	1,1	107,4	12,6	II	
min	17,0	2359,1	945,8	2,7	1,1	107,4	12,5		
max	26,0	3229,5	1054,7	4,0	0,9	108,8	13,9	III	
min	2,0	890,6	920,0	2,4	1,1	107,1	12,2		

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S3	probe depth m	80,0	code	5	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	27.08.21	pag	2/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

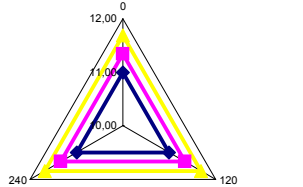
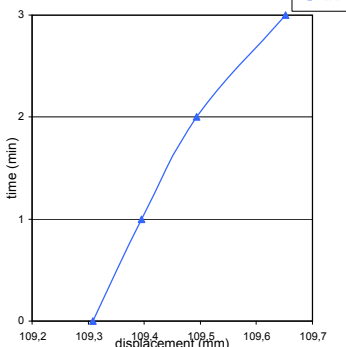
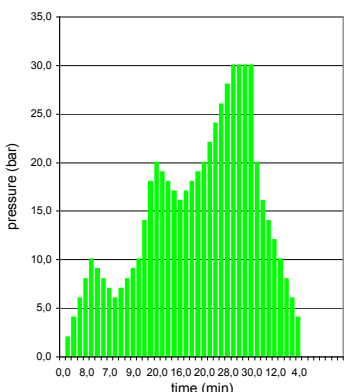
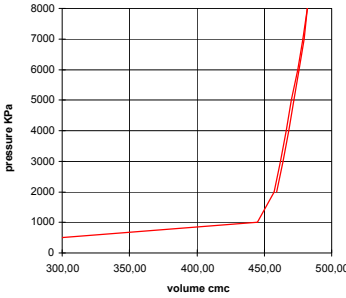


DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE				
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do = cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated $\epsilon_c = dR / R_o$ ELASTICITY MODULUS Ei Ei = (1+ ν) Φ Pax - Pmin dmax - dmin DEFORMATION MODULUS Ti Ti = (1+ ν) Φ Pi - Pi-1 Xi - Xi-1 GLOBAL DEFORMATION MODULUS EG EG = (1+ ν) Φ Pmax - Po dmax - do FORO LARGO				DATA				ELASTICITY MODULUS Ei									
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)				
				symbol	datum	1	10,0	7,0					504				
				γsoil	2,0	2	20,0	17,0					1817				
				W (ml)	80,0	3	26,0	2,0					212				
				ν	0,45	4											
				vo (cmc)	3357	5											
				do (mm)	94,87	DEFORMATION MODULUS Ti											
				σv (kPa)	1600	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)		
				height mt	0	1	10,0	2,0							103		
						2	20,0	10,0							88		
						3	26,0	20,0							66		
						4											
						5											
				GLOBAL DEFORMATION MODULUS EG													
							Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)		
							26,0	2,0							90		
				DIAMETER					F		F		F		F		
				beginning diameter (mm)											104,613		
				final diameter (mm)											107,430		
				range mm											2,817		
				DM loop minimum displacement					DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS								
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)			913	EG (MPa)			90	
				bar	0	120	240	0	Pf creep pressure (KPa)			3232	E (MPa)			212	
				10,0	10,997	10,997	10,997	10,889	PL limit pres. (KPa) Cassan >			4710	E/PL			25,15	
				20,0	11,342	11,342	11,342	12,561	PL' net limit pres (KPa) >			3590	EG/Ey			0,43	
				26,0	11,692	11,692	11,692	13,887	Ko lateral coeff at rest (KPa)			0,70	cu cohesion (KPa) johnson>			496	
									Pho lateral pressure (KPa)			1120	φ friction angle (°)				

	borehole	S3	probe depth m	90,0	mod DVT REV3. 20 settembre 2020				
	Client:	FROSIO NEXT	job	2140	v. accept.	2140	code	7	
	Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT				
	site	GRAVINA DI PUGLIA	coordinates	EAST	NORTH	date	27.08.21	pag	1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

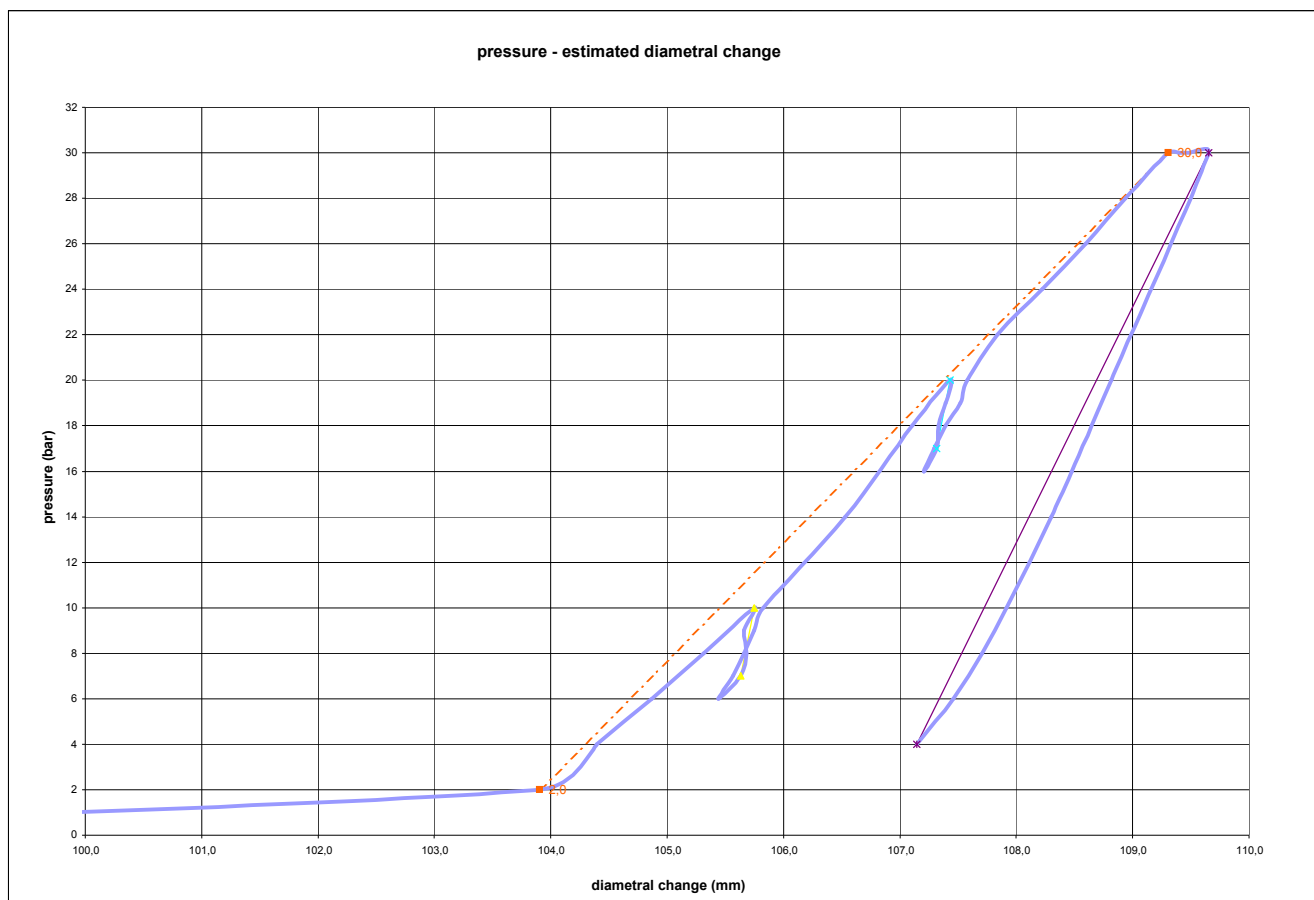
Borehole				S3			
test		7		real depth 90,0			
slope (degree)		90		core barrell C.SEMPLICE 101 MM			
Device:						GEOANALISI VM02	
Orientation capteur		C1=		Standard method: ISRM 1987			
Probe diam		90 MM		Borehole diam		101	
Meteo				Temperatu re			
lithotype						ARGILLA	
water table		85,0		POCKET PENETRO METER			
Temps mir						PBAR	
0						30,00	
1						30,00	
2						30,00	
3						30,00	
109,31						109,39	
109,49						109,65	
PROBE SCHEME							
						rod adaptor	
						electronic device	
						double action piston	
						expandable cylinder	
PROBE CALIBRATION							
probe						CAUCCIU' ARMATO	
measure cell height (cm)						47,50	
V0 cell volume at rest (cmc)						3357	
lenght cable (mt)						100	
Volume initial Vi (cmc)						449	
diam calibration tube (cm)						10,1	
tube calibration volume cmc						3806	
Calibration in air						coeff m	
0,11						Kpa/cmc	
Confined calibration							
first load						3,98	
unload						3,32	
3,32						cmc/Moa	

direction - displacement			
			
creep diagram			
			
pressure - time			
			
calibration			
			

PRESSURE				P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo
STEP				bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa
0				0,0	0	0,00	-8,697	0,000	94,870	0,000	0,0
1				2,0	1019	669,98	0,000	1,493	103,906	9,036	16,3
2				4,0	1211	707,96	0,470	1,413	104,395	9,525	59,3
3				6,0	1403	744,93	0,926	1,342	104,869	9,999	61,5
4				8,0	1595	779,91	1,356	1,282	105,315	10,445	65,6
5				10,0	1788	813,89	1,771	1,229	105,746	10,877	68,2
6				9,0	1690	806,90	1,686	1,239	105,658	10,788	168,2
7				8,0	1592	808,91	1,710	1,236	105,683	10,814	-590,6
8				7,0	1494	804,92	1,662	1,242	105,633	10,763	295,6
9				6,0	1398	789,93	1,478	1,266	105,442	10,573	77,5
10				7,0	1495	799,92	1,601	1,250	105,569	10,700	116,9
11				8,0	1592	806,91	1,686	1,239	105,658	10,788	168,0
12				9,0	1689	813,90	1,771	1,229	105,746	10,877	168,2
13				10,0	1787	819,89	1,844	1,220	105,822	10,953	196,9
14				14,0	2173	875,85	2,524	1,142	106,529	11,659	84,1
15				18,0	2560	921,80	3,079	1,085	107,106	12,236	104,0
16				20,0	2753	947,78	3,392	1,055	107,430	12,561	92,6
17				19,0	2655	944,79	3,356	1,058	107,393	12,523	408,1
18				18,0	2558	939,80	3,296	1,064	107,331	12,461	243,7
19				17,0	2460	938,81	3,284	1,065	107,318	12,449	1234,4
20				16,0	2363	929,82	3,176	1,075	107,206	12,336	134,4
21				17,0	2460	936,81	3,260	1,067	107,293	12,424	173,2
22				18,0	2557	944,80	3,356	1,058	107,393	12,523	151,6
23				19,0	2654	954,79	3,476	1,047	107,518	12,648	121,2
24				20,0	2752	959,78	3,536	1,042	107,580	12,710	244,6
25				22,0	2946	980,76	3,787	1,020	107,841	12,971	115,9
26				24,0	3138	1011,74	4,157	0,988	108,225	13,356	78,5
27				26,0	3331	1041,71	4,514	0,960	108,596	13,726	81,7
28				28,0	3524	1069,69	4,846	0,935	108,941	14,071	88,3
29				30,0	3717	1099,67	5,200	0,909	109,309	14,439	82,8
30				30,0	3716	1106,67	5,283	0,904	109,395	14,525	-1,5
31				30,0	3715	1114,67	5,377	0,897	109,493	14,623	-1,5
32				30,0	3713	1127,67	5,530	0,887	109,652	14,782	-1,5
33				20,0	2740	1059,78	4,728	0,944	108,819	13,949	185,0
34				16,0	2351	1031,82	4,396	0,969	108,474	13,604	177,8
35				14,0	2157	1017,85	4,230	0,982	108,301	13,431	176,9
36				12,0	1962	1002,87	4,051	0,997	108,115	13,246	164,5
37				10,0	1768	986,89	3,860	1,013	107,917	13,048	153,5
38				8,0	1573	969,91	3,657	1,031	107,706	12,836	143,8
39				6,0	1380	949,93	3,418	1,053	107,457	12,587	121,5
40				4,0	1186	924,96	3,117	1,081	107,145	12,275	96,4
										</	

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S3	probe depth m	90,0	code	7	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	27.08.21	pag	2/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



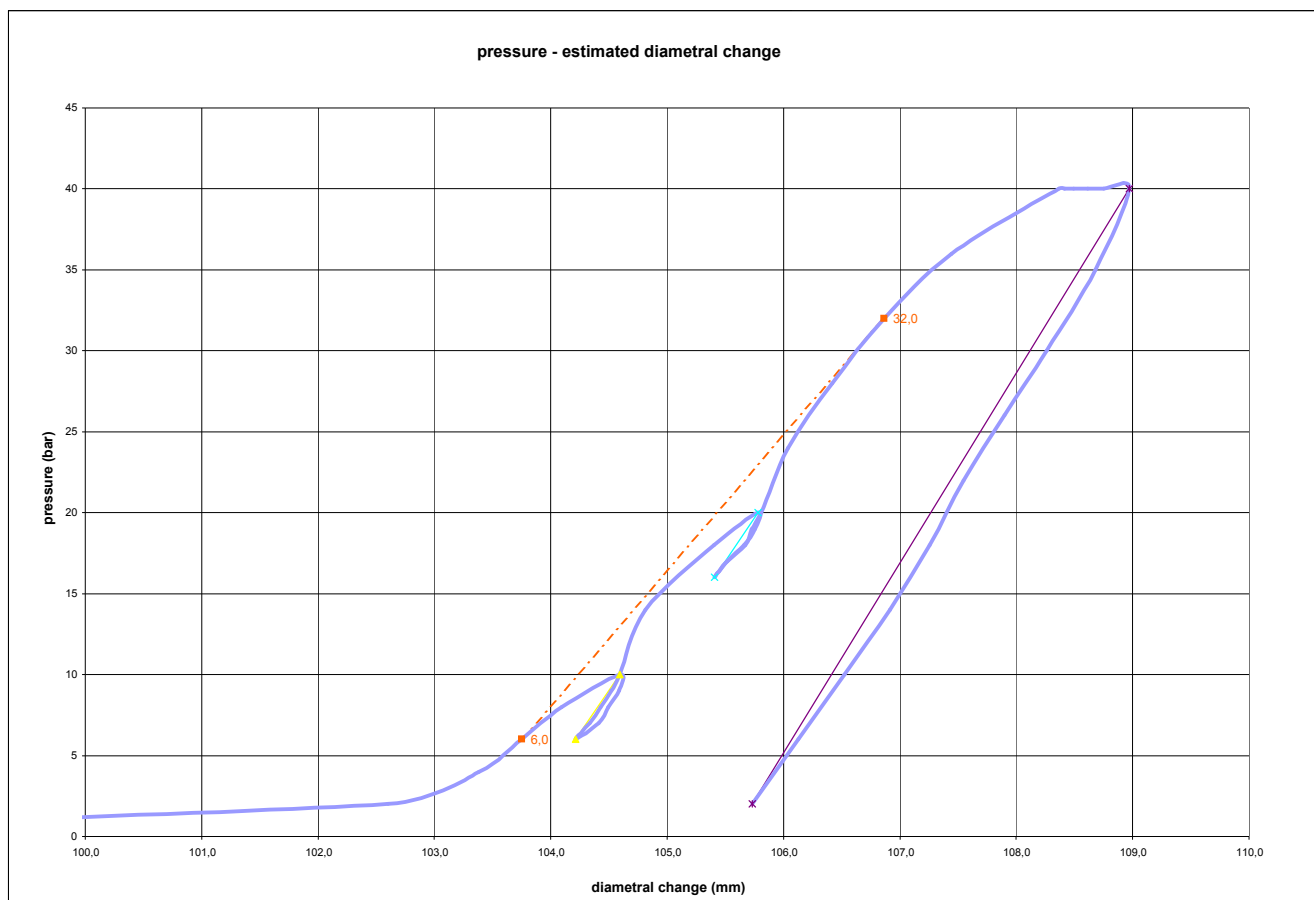
DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE				
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro ELASTICITY MODULUS Ei ELASTICITY MODULUS Ey estimated Ei = (1+ ν) Φ Pax - Pmin Ey= (EII+EIII)/2 dmax - dmin Ey= EIII DEFORMATION MODULUS Ti Ti = (1+ ν) Φ Pi - Pi-1 Xi - Xi-1 GLOBAL DEFORMATION MODULUS EG EG = (1+ ν) Φ Pmax - Po dmax - do				ELASTICITY MODULUS Ei													
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)				
				symbol	datum	1	10,0	7,0					388				
				γsoil	2,0	2	20,0	17,0					395				
				W (ml)	90,0	3	30,0	4,0					152				
				ν	0,45	4											
				vo (cmc)	3357	5											
				do (mm)	94,87	DEFORMATION MODULUS Ti											
				σv (kPa)	1800	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)		
				height mt	0	1	10,0	2,0							63		
						2	20,0	10,0							86		
						3	30,0	20,0							65		
						4											
						5											
				GLOBAL DEFORMATION MODULUS EG													
							Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)		
							30,0	2,0							75		
				DIAMETER					F		F		F		F		
				beginning diameter (mm)											103,906		
				final diameter (mm)											107,430		
				range mm											3,524		
				DM loop minimum displacement					DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS								
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)			1019	EG (MPa)		75		
				bar	0	120	240	0	Pf creep pressure (KPa)			3717	E (MPa)		152		
				10,0	10,997	10,997	10,997	10,877	PL limit pres. (KPa) Cassan >			5436	E/PL		18,01		
				20,0	11,342	11,342	11,342	12,561	PL' net limit pres (KPa) >			4176	EG/Ey		0,50		
				30,0	11,692	11,692	11,692	14,782	Ko lateral coeff at rest (KPa)			0,70	cu coesion (KPa) johnson		569		
									Pho lateral pressure (KPa)			1260	φ friction anole (°)				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

[illegible]

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S3	probe depth m	98,0	code	8	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	27.08.21	pag	2/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE			
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro				DATA		ELASTICITY MODULUS Ei										
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)			
symbol				datum	1	10,0	6,0							156		
γnsoil				2,0	2	20,0	16,0							158		
W (ml)				98,0	3	40,0	2,0							172		
v				0,45	4											
vo (cmc)				3357	5											
do (mm)				94,87	DEFORMATION MODULUS Ti											
σv (kPa)				1960	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)		
height mt				0	1	10,0	6,0							69		
					2	20,0	10,0							123		
					3	40,0	20,0							91		
					4											
					5											
					GLOBAL DEFORMATION MODULUS EG											
ELASTICITY MODULUS Ei				ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)	
Ei = (1+ ν) Φ Pax - Pmin				Ey= (EII+EIIII)/2			32,0	6,0							122	
dmax - dmin				Ey= EIIII		DIAMETER			F		F		F		F	
						beginning diameter (mm)									103,751	
DEFORMATION MODULUS Ti						final diameter (mm)									105,781	
Ti = (1+ ν) Φ Pi - Pi-1						range mm									2,030	
Xi - Xi-1				DM loop minimum displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS									
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		1111		EG (MPa)		122	
GLOBAL DEFORMATION MODULUS EG				bar	0	120	240	0	Pf creep pressure (KPa)		4024		E (MPa)		172	
EG = (1+ ν) Φ Pmax - Po				10,0	10,997	10,997	10,997	9,722	PL limit pres. (KPa) Cassan >		5881		E/PL		27,11	
dmax - do				20,0	11,342	11,342	11,342	10,911	PL' net limit pres (KPa) >		4509		EG/Ey		0,71	
				40,0	11,692	11,692	11,692	14,102	Ko lateral coeff at rest (KPa)		0,70		cu coesion (KPa) johnson		613	
									Pho lateral pressure (KPa)		1372		φ friction anole (°)			



DILATOMETRIC ROCK TEST DRT

mod DVT REV3. 20 settembre 2020

boreholeS3

probe depth m98,0

code8

Client:FROSIO NEXT

job2140

v. accept2140

Project:IMPIANTO SERRA DEL CORLO

report2140

DRT

siteGRAVINA DI PUGLIA

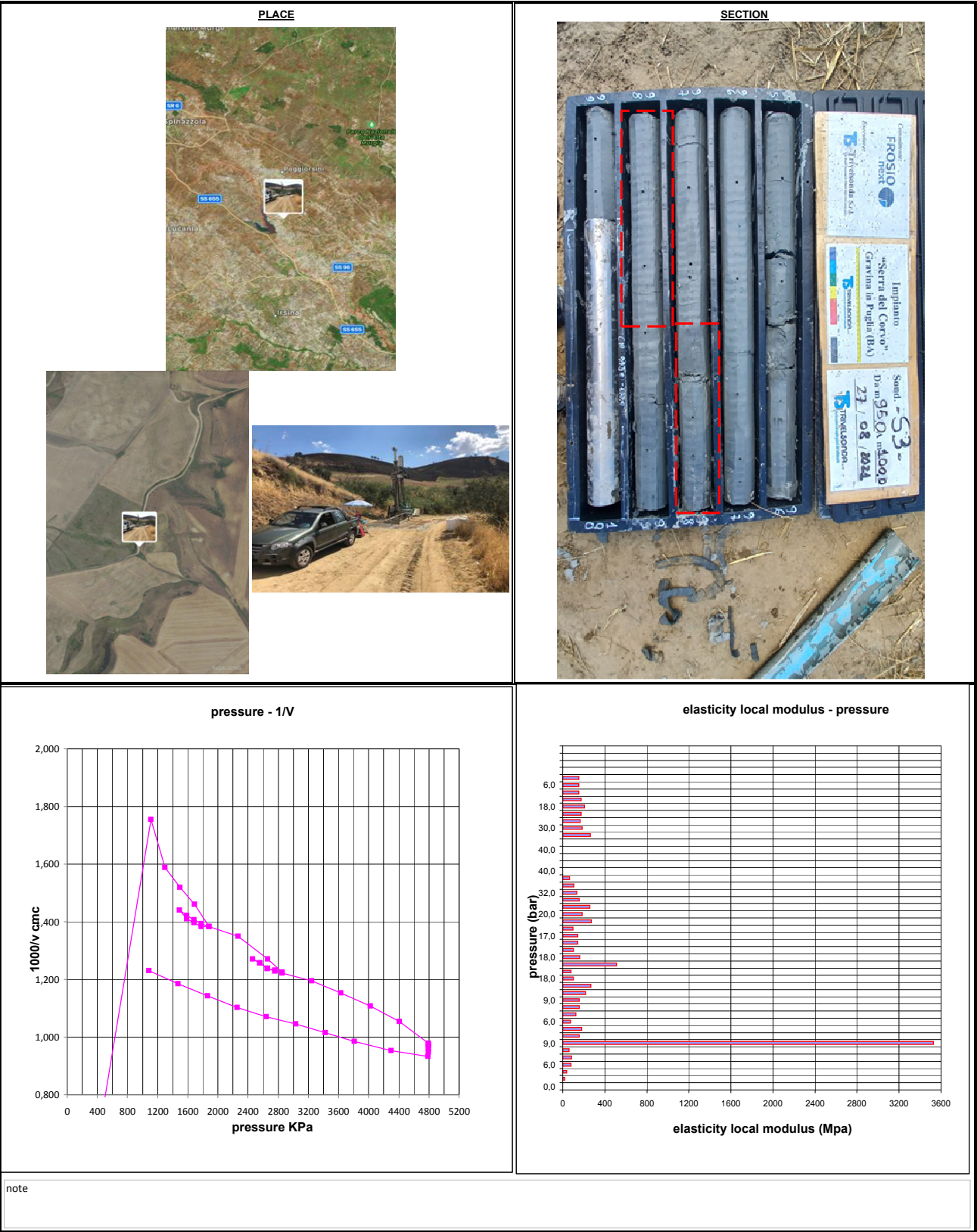
coordinatesEAST

NORTH

date27.08.21

pag3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

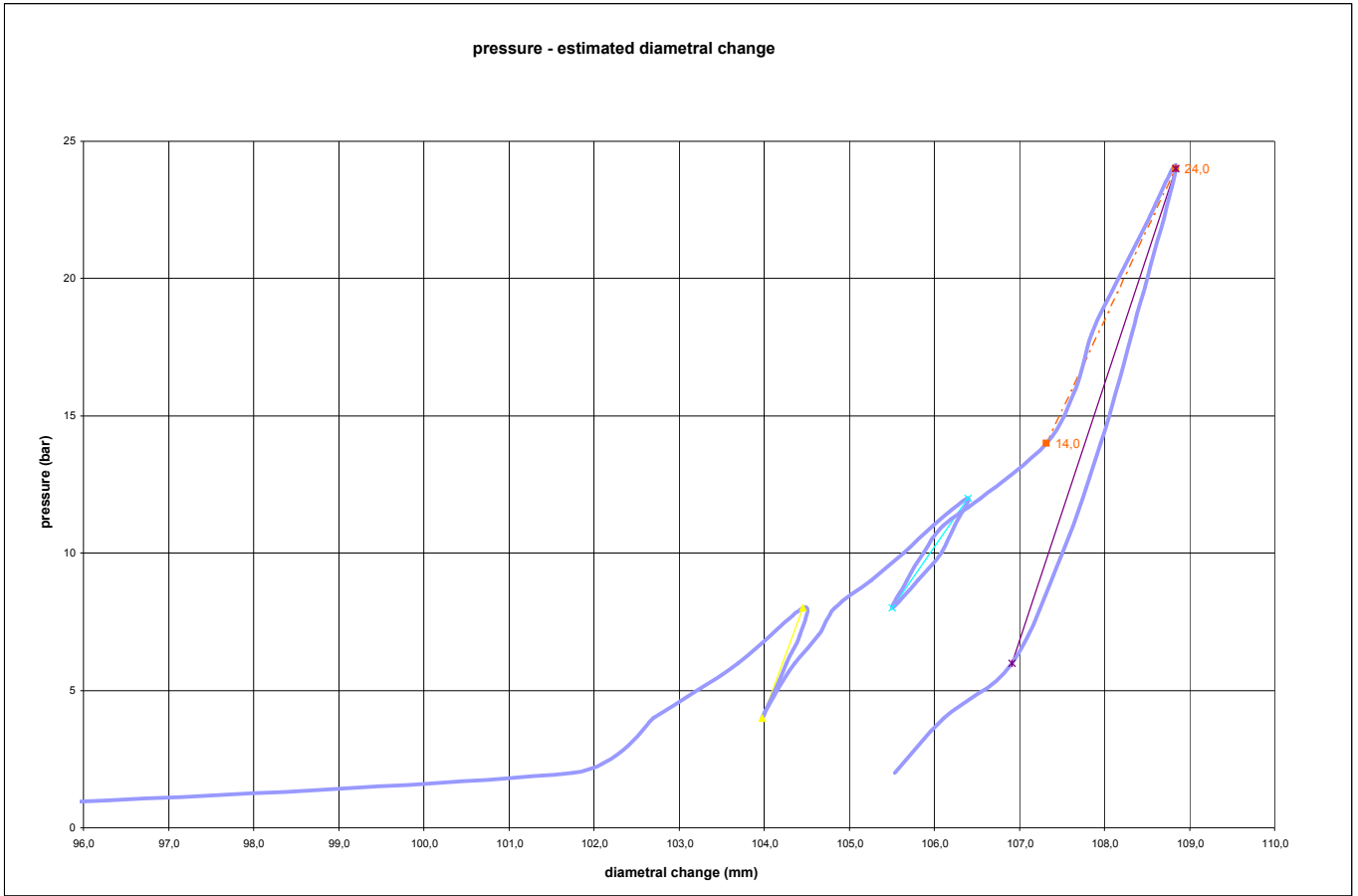


	borehole S4		probe depth m 79,5	mod DVT REV3. 20 settembre 2020	
	Client: FROSIO NEXT		job 2140	v. accept. 2140	
	Project IMPIANTO SERRA DEL CORLO		report 2140	DRT	
	site GRAVINA DI PUGLIA	coordinates 2,2	EAST	date 20.09.21	pag 1/3
			NORTH		

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole				S4	
test	1	depth	79,5		
slope (degree)		core barrel			
90		HQ			
Device:					
GEOANALISI VM02					
Orientation capteur		Standard method:			
C1=		ISRM 1987			
Probe diam	90	Borehole diam	VEDI DIAM		
Meteo	Temperatu re				
lithotype					
ARGILLA DEB.MARNOSA AD ARGILLA DURA CON INTERC. SABBIOSE					
water table		40,0	POCKET PENETRO METER		
Temps mir	PBAR	MM			

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

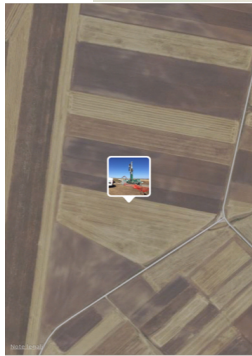
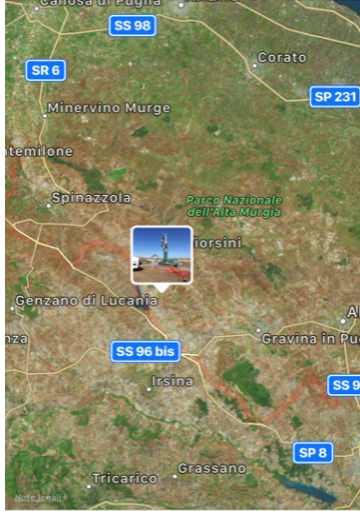


DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE			
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro	DATA		ELASTICITY MODULUS Ei									
			loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)		
	symbol	datum	1	8,0	4,0					126		
	γnsoil	2,2	2	12,0	8,0					67		
	W (ml)	79,5	3	24,0	6,0					142		
	v	0,45	4									
	vo (cmc)	2984	5									
	do (mm)	89,45	DEFORMATION MODULUS Ti									
	σv (kPa)	1749	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)	T3 (Mpa)	Tm (Mpa)		
	height mt		1	8,0	14,0					31		
		2	12,0	8,0					30			
		3	24,0	12,0					74			
		4										
		5										
			GLOBAL DEFORMATION MODULUS EG									
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)	
Ei = (1+ ν) Φ Pax - Pmin		Ey= (EII+EIII)/2			24,0	14,0					99	
dmax - dmin		Ey= EIII		DIAMETER			F		F	F	F	
DEFORMATION MODULUS Ti Ti = (1+ ν) Φ Pi - Pi-1 Xi - Xi-1				beginning diameter (mm)							107,321	
				final diameter (mm)								108,838
				range mm								1,517
DM loop minimun displacement				DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS								
		Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		1267	EG (MPa)		99
GLOBAL DEFORMATION MODULUS EG		bar	0	120	240	0	Pf creep pressure (KPa)		2991	E (MPa)		142
EG = (1+ ν) Φ Pmax - Po		8,0	10,997	10,997	10,997	15,011	PL limit pres. (KPa) Cassan >		4228	E/PL		33,11
dmax - do		12,0	11,342	11,342	11,342	16,947	PL' net limit pres (KPa) >		3004	EG/Ey		0,70
TRATTO PRIMA DEFORMAZIONE AFFETTO DA		24,0	11,692	11,692	11,692	19,389	Ko lateral coeff at rest (KPa)		0,70	cu coesion (KPa) johnson >		448
DISTURBO DA PERFORAZIONE							Pho lateral pressure (KPa)		1224	φ friction angle (°) >		

borehole	S4	probe depth m	79,5	code	1
Client:	FROSIO NEXT	job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	20.09.21
			NORTH	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

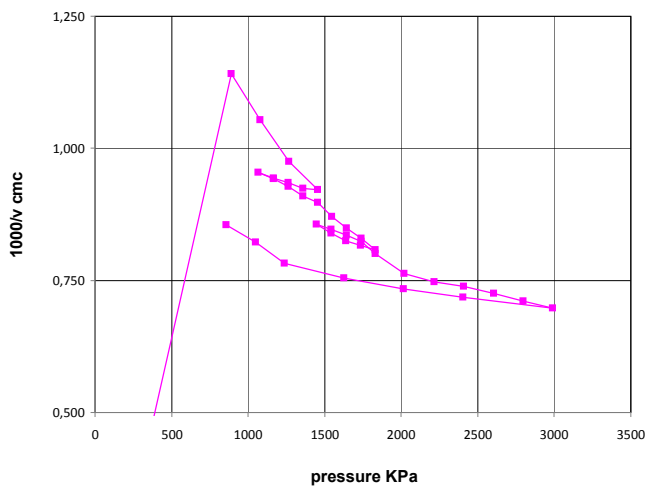
PLACE



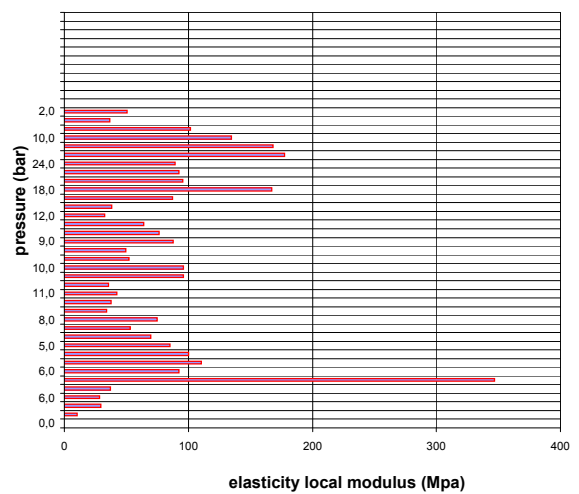
SECTION



pressure - 1/V



elasticity local modulus - pressure



note

	borehole	S4	probe depth m	99,5	code	2	mod DVT REV3. 20 settembre 2020	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140	
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT		
	site	GRAVINA DI PUGLIA	coordinates	EAST	date	20.09.21	pag	1/3
				NORTH				

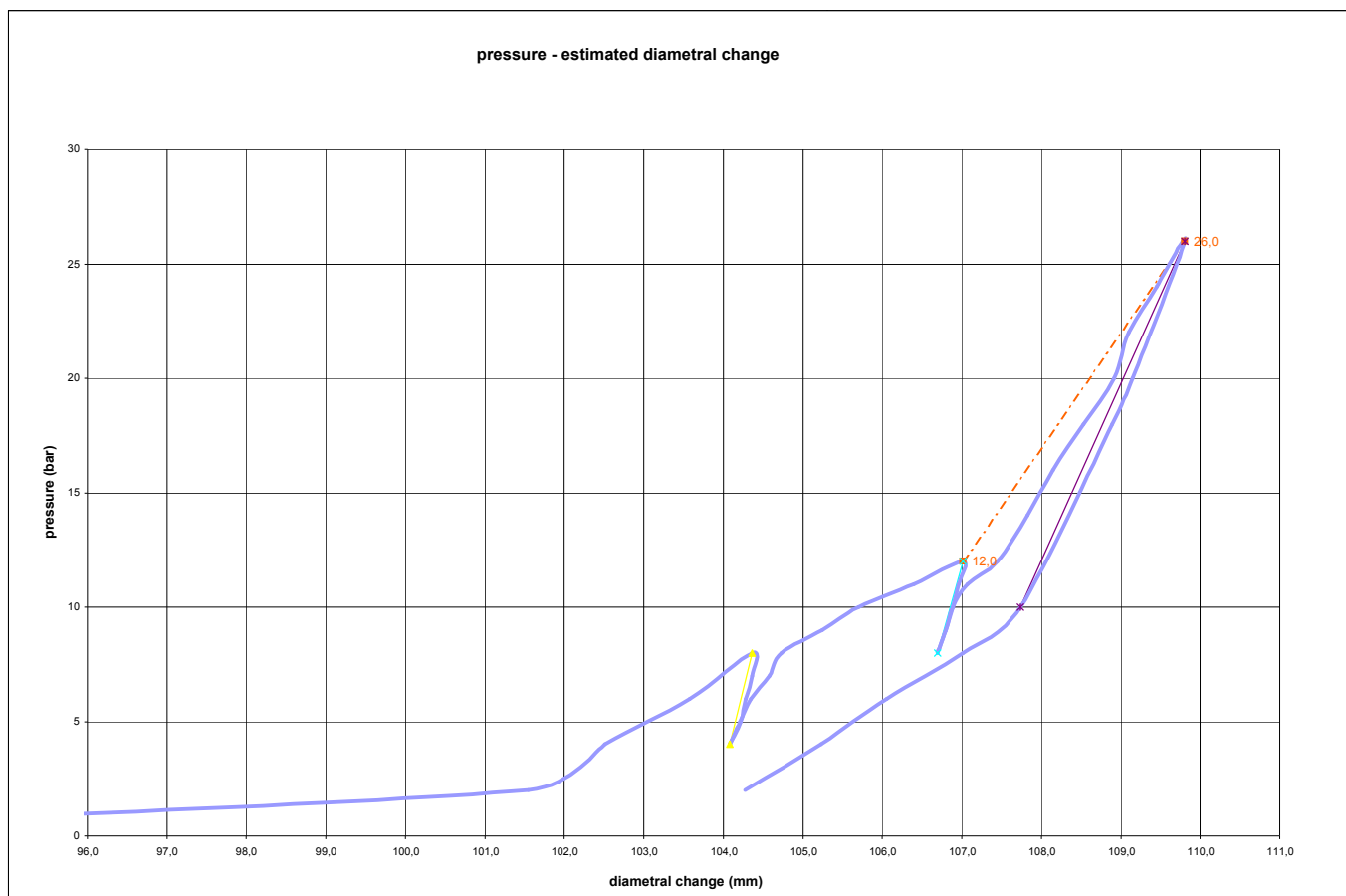
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole S4				direction - displacement																																																																																																																																																																																																																																																																																																																																																																											
test 2	depth 99,5																																																																																																																																																																																																																																																																																																																																																																														
slope (degree) 90		core barrel HQ		creep diagram																																																																																																																																																																																																																																																																																																																																																																											
Device: GEOANALISI VM02																																																																																																																																																																																																																																																																																																																																																																															
Orientation capteur C1=		Standard method: ISRM 1987		pressure - time																																																																																																																																																																																																																																																																																																																																																																											
Probe diam 90		Borehole diam VEDI DIAM																																																																																																																																																																																																																																																																																																																																																																													
Meteo		Temperature		calibration																																																																																																																																																																																																																																																																																																																																																																											
lithotype ARGILLA DEB.MARNOSA AD ARGILLA DURA CON INTERC. SABBIOSE																																																																																																																																																																																																																																																																																																																																																																															
water table 40,0		POCKET PENETRO METER		FIELD LIMITS <table><thead><tr><th></th><th>P</th><th>P corr</th><th>V corr</th><th>creep</th><th>1000/V</th><th>diameter</th><th>Dil. Diam</th><th>Modulo</th></tr></thead><tbody><tr><td>0</td><td>0,0</td><td>0</td><td>0,0</td><td>-16,412</td><td>0,000</td><td>89,449</td><td>0,000</td><td>0,0</td></tr><tr><td>1</td><td>2,0</td><td>1092</td><td>862,0</td><td>-5,105</td><td>1,160</td><td>101,549</td><td>12,100</td><td>12,5</td></tr><tr><td>2</td><td>4,0</td><td>1279</td><td>935,0</td><td>-4,209</td><td>1,070</td><td>102,508</td><td>13,059</td><td>28,9</td></tr><tr><td>3</td><td>6,0</td><td>1465</td><td>1017,0</td><td>-3,212</td><td>0,983</td><td>103,575</td><td>14,126</td><td>26,1</td></tr><tr><td>4</td><td>8,0</td><td>1654</td><td>1078,0</td><td>-2,477</td><td>0,928</td><td>104,362</td><td>14,912</td><td>36,2</td></tr><tr><td>5</td><td>7,0</td><td>1556</td><td>1078,0</td><td>-2,477</td><td>0,928</td><td>104,362</td><td>14,912</td><td>1153006,0</td></tr><tr><td>6</td><td>6,0</td><td>1459</td><td>1072,0</td><td>-2,549</td><td>0,933</td><td>104,284</td><td>14,835</td><td>190,6</td></tr><tr><td>7</td><td>5,0</td><td>1362</td><td>1067,0</td><td>-2,609</td><td>0,937</td><td>104,220</td><td>14,771</td><td>228,7</td></tr><tr><td>8</td><td>4,0</td><td>1265</td><td>1056,0</td><td>-2,742</td><td>0,947</td><td>104,079</td><td>14,629</td><td>103,0</td></tr><tr><td>9</td><td>5,0</td><td>1362</td><td>1066,0</td><td>-2,621</td><td>0,938</td><td>104,207</td><td>14,758</td><td>113,5</td></tr><tr><td>10</td><td>6,0</td><td>1459</td><td>1077,0</td><td>-2,489</td><td>0,928</td><td>104,349</td><td>14,899</td><td>103,3</td></tr><tr><td>11</td><td>7,0</td><td>1554</td><td>1095,0</td><td>-2,273</td><td>0,913</td><td>104,580</td><td>15,130</td><td>62,8</td></tr><tr><td>12</td><td>8,0</td><td>1651</td><td>1107,0</td><td>-2,130</td><td>0,903</td><td>104,733</td><td>15,284</td><td>95,3</td></tr><tr><td>13</td><td>9,0</td><td>1744</td><td>1147,0</td><td>-1,652</td><td>0,872</td><td>105,244</td><td>15,795</td><td>27,8</td></tr><tr><td>14</td><td>10,0</td><td>1838</td><td>1183,0</td><td>-1,225</td><td>0,845</td><td>105,702</td><td>16,252</td><td>31,3</td></tr><tr><td>15</td><td>11,0</td><td>1929</td><td>1238,0</td><td>-0,575</td><td>0,808</td><td>106,397</td><td>16,948</td><td>20,3</td></tr><tr><td>16</td><td>12,0</td><td>2022</td><td>1287,0</td><td>0,000</td><td>0,777</td><td>107,012</td><td>17,563</td><td>23,2</td></tr><tr><td>17</td><td>11,0</td><td>1924</td><td>1283,0</td><td>-0,047</td><td>0,779</td><td>106,962</td><td>17,513</td><td>301,4</td></tr><tr><td>18</td><td>10,0</td><td>1827</td><td>1277,0</td><td>-0,117</td><td>0,783</td><td>106,887</td><td>17,438</td><td>200,3</td></tr><tr><td>19</td><td>9,0</td><td>1730</td><td>1270,0</td><td>-0,199</td><td>0,787</td><td>106,799</td><td>17,350</td><td>171,2</td></tr><tr><td>20</td><td>8,0</td><td>1633</td><td>1262,0</td><td>-0,293</td><td>0,792</td><td>106,699</td><td>17,249</td><td>149,4</td></tr><tr><td>21</td><td>9,0</td><td>1730</td><td>1270,0</td><td>-0,199</td><td>0,787</td><td>106,799</td><td>17,350</td><td>149,4</td></tr><tr><td>22</td><td>10,0</td><td>1827</td><td>1277,0</td><td>-0,117</td><td>0,783</td><td>106,887</td><td>17,438</td><td>171,2</td></tr><tr><td>23</td><td>11,0</td><td>1923</td><td>1292,0</td><td>0,058</td><td>0,774</td><td>107,075</td><td>17,626</td><td>79,3</td></tr><tr><td>24</td><td>12,0</td><td>2018</td><td>1322,0</td><td>0,409</td><td>0,756</td><td>107,450</td><td>18,001</td><td>39,2</td></tr><tr><td>25</td><td>14,0</td><td>2210</td><td>1352,0</td><td>0,758</td><td>0,740</td><td>107,824</td><td>18,374</td><td>80,3</td></tr><tr><td>26</td><td>16,0</td><td>2403</td><td>1378,0</td><td>1,060</td><td>0,726</td><td>108,146</td><td>18,697</td><td>93,5</td></tr><tr><td>27</td><td>18,0</td><td>2595</td><td>1409,0</td><td>1,418</td><td>0,710</td><td>108,530</td><td>19,081</td><td>78,7</td></tr><tr><td>28</td><td>20,0</td><td>2787</td><td>1440,0</td><td>1,775</td><td>0,694</td><td>108,912</td><td>19,463</td><td>79,3</td></tr><tr><td>29</td><td>22,0</td><td>2981</td><td>1455,0</td><td>1,948</td><td>0,687</td><td>109,097</td><td>19,647</td><td>166,2</td></tr><tr><td>30</td><td>24,0</td><td>3173</td><td>1484,0</td><td>2,280</td><td>0,674</td><td>109,453</td><td>20,003</td><td>85,7</td></tr><tr><td>31</td><td>26,0</td><td>3366</td><td>1513,0</td><td>2,612</td><td>0,661</td><td>109,807</td><td>20,358</td><td>86,3</td></tr><tr><td>32</td><td>20,0</td><td>2785</td><td>1459,0</td><td>1,994</td><td>0,685</td><td>109,146</td><td>19,697</td><td>139,5</td></tr><tr><td>33</td><td>18,0</td><td>2592</td><td>1438,0</td><td>1,752</td><td>0,695</td><td>108,888</td><td>19,438</td><td>118,3</td></tr><tr><td>34</td><td>10,0</td><td>1819</td><td>1345,0</td><td>0,677</td><td>0,743</td><td>107,737</td><td>18,287</td><td>105,4</td></tr><tr><td>35</td><td>8,0</td><td>1630</td><td>1287,0</td><td>0,000</td><td>0,777</td><td>107,012</td><td>17,563</td><td>40,7</td></tr><tr><td>36</td><td>6,0</td><td>1443</td><td>1211,0</td><td>-0,894</td><td>0,826</td><td>106,056</td><td>16,607</td><td>30,2</td></tr><tr><td>37</td><td>4,0</td><td>1255</td><td>1146,0</td><td>-1,664</td><td>0,873</td><td>105,231</td><td>15,782</td><td>35,0</td></tr><tr><td>38</td><td>2,0</td><td>1068</td><td>1071,0</td><td>-2,561</td><td>0,934</td><td>104,272</td><td>14,822</td><td>29,6</td></tr></tbody></table>					P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	Modulo	0	0,0	0	0,0	-16,412	0,000	89,449	0,000	0,0	1	2,0	1092	862,0	-5,105	1,160	101,549	12,100	12,5	2	4,0	1279	935,0	-4,209	1,070	102,508	13,059	28,9	3	6,0	1465	1017,0	-3,212	0,983	103,575	14,126	26,1	4	8,0	1654	1078,0	-2,477	0,928	104,362	14,912	36,2	5	7,0	1556	1078,0	-2,477	0,928	104,362	14,912	1153006,0	6	6,0	1459	1072,0	-2,549	0,933	104,284	14,835	190,6	7	5,0	1362	1067,0	-2,609	0,937	104,220	14,771	228,7	8	4,0	1265	1056,0	-2,742	0,947	104,079	14,629	103,0	9	5,0	1362	1066,0	-2,621	0,938	104,207	14,758	113,5	10	6,0	1459	1077,0	-2,489	0,928	104,349	14,899	103,3	11	7,0	1554	1095,0	-2,273	0,913	104,580	15,130	62,8	12	8,0	1651	1107,0	-2,130	0,903	104,733	15,284	95,3	13	9,0	1744	1147,0	-1,652	0,872	105,244	15,795	27,8	14	10,0	1838	1183,0	-1,225	0,845	105,702	16,252	31,3	15	11,0	1929	1238,0	-0,575	0,808	106,397	16,948	20,3	16	12,0	2022	1287,0	0,000	0,777	107,012	17,563	23,2	17	11,0	1924	1283,0	-0,047	0,779	106,962	17,513	301,4	18	10,0	1827	1277,0	-0,117	0,783	106,887	17,438	200,3	19	9,0	1730	1270,0	-0,199	0,787	106,799	17,350	171,2	20	8,0	1633	1262,0	-0,293	0,792	106,699	17,249	149,4	21	9,0	1730	1270,0	-0,199	0,787	106,799	17,350	149,4	22	10,0	1827	1277,0	-0,117	0,783	106,887	17,438	171,2	23	11,0	1923	1292,0	0,058	0,774	107,075	17,626	79,3	24	12,0	2018	1322,0	0,409	0,756	107,450	18,001	39,2	25	14,0	2210	1352,0	0,758	0,740	107,824	18,374	80,3	26	16,0	2403	1378,0	1,060	0,726	108,146	18,697	93,5	27	18,0	2595	1409,0	1,418	0,710	108,530	19,081	78,7	28	20,0	2787	1440,0	1,775	0,694	108,912	19,463	79,3	29	22,0	2981	1455,0	1,948	0,687	109,097	19,647	166,2	30	24,0	3173	1484,0	2,280	0,674	109,453	20,003	85,7	31	26,0	3366	1513,0	2,612	0,661	109,807	20,358	86,3	32	20,0	2785	1459,0	1,994	0,685	109,146	19,697	139,5	33	18,0	2592	1438,0	1,752	0,695	108,888	19,438	118,3	34	10,0	1819	1345,0	0,677	0,743	107,737	18,287	105,4	35	8,0	1630	1287,0	0,000	0,777	107,012	17,563	40,7	36	6,0	1443	1211,0	-0,894	0,826	106,056	16,607	30,2	37	4,0	1255	1146,0	-1,664	0,873	105,231	15,782	35,0	38	2,0	1068	1071,0	-2,561	0,934	104,272	14,822	29,6
	P	P corr	V corr					creep	1000/V	diameter	Dil. Diam	Modulo																																																																																																																																																																																																																																																																																																																																																																			
0	0,0	0	0,0	-16,412	0,000	89,449	0,000	0,0																																																																																																																																																																																																																																																																																																																																																																							
1	2,0	1092	862,0	-5,105	1,160	101,549	12,100	12,5																																																																																																																																																																																																																																																																																																																																																																							
2	4,0	1279	935,0	-4,209	1,070	102,508	13,059	28,9																																																																																																																																																																																																																																																																																																																																																																							
3	6,0	1465	1017,0	-3,212	0,983	103,575	14,126	26,1																																																																																																																																																																																																																																																																																																																																																																							
4	8,0	1654	1078,0	-2,477	0,928	104,362	14,912	36,2																																																																																																																																																																																																																																																																																																																																																																							
5	7,0	1556	1078,0	-2,477	0,928	104,362	14,912	1153006,0																																																																																																																																																																																																																																																																																																																																																																							
6	6,0	1459	1072,0	-2,549	0,933	104,284	14,835	190,6																																																																																																																																																																																																																																																																																																																																																																							
7	5,0	1362	1067,0	-2,609	0,937	104,220	14,771	228,7																																																																																																																																																																																																																																																																																																																																																																							
8	4,0	1265	1056,0	-2,742	0,947	104,079	14,629	103,0																																																																																																																																																																																																																																																																																																																																																																							
9	5,0	1362	1066,0	-2,621	0,938	104,207	14,758	113,5																																																																																																																																																																																																																																																																																																																																																																							
10	6,0	1459	1077,0	-2,489	0,928	104,349	14,899	103,3																																																																																																																																																																																																																																																																																																																																																																							
11	7,0	1554	1095,0	-2,273	0,913	104,580	15,130	62,8																																																																																																																																																																																																																																																																																																																																																																							
12	8,0	1651	1107,0	-2,130	0,903	104,733	15,284	95,3																																																																																																																																																																																																																																																																																																																																																																							
13	9,0	1744	1147,0	-1,652	0,872	105,244	15,795	27,8																																																																																																																																																																																																																																																																																																																																																																							
14	10,0	1838	1183,0	-1,225	0,845	105,702	16,252	31,3																																																																																																																																																																																																																																																																																																																																																																							
15	11,0	1929	1238,0	-0,575	0,808	106,397	16,948	20,3																																																																																																																																																																																																																																																																																																																																																																							
16	12,0	2022	1287,0	0,000	0,777	107,012	17,563	23,2																																																																																																																																																																																																																																																																																																																																																																							
17	11,0	1924	1283,0	-0,047	0,779	106,962	17,513	301,4																																																																																																																																																																																																																																																																																																																																																																							
18	10,0	1827	1277,0	-0,117	0,783	106,887	17,438	200,3																																																																																																																																																																																																																																																																																																																																																																							
19	9,0	1730	1270,0	-0,199	0,787	106,799	17,350	171,2																																																																																																																																																																																																																																																																																																																																																																							
20	8,0	1633	1262,0	-0,293	0,792	106,699	17,249	149,4																																																																																																																																																																																																																																																																																																																																																																							
21	9,0	1730	1270,0	-0,199	0,787	106,799	17,350	149,4																																																																																																																																																																																																																																																																																																																																																																							
22	10,0	1827	1277,0	-0,117	0,783	106,887	17,438	171,2																																																																																																																																																																																																																																																																																																																																																																							
23	11,0	1923	1292,0	0,058	0,774	107,075	17,626	79,3																																																																																																																																																																																																																																																																																																																																																																							
24	12,0	2018	1322,0	0,409	0,756	107,450	18,001	39,2																																																																																																																																																																																																																																																																																																																																																																							
25	14,0	2210	1352,0	0,758	0,740	107,824	18,374	80,3																																																																																																																																																																																																																																																																																																																																																																							
26	16,0	2403	1378,0	1,060	0,726	108,146	18,697	93,5																																																																																																																																																																																																																																																																																																																																																																							
27	18,0	2595	1409,0	1,418	0,710	108,530	19,081	78,7																																																																																																																																																																																																																																																																																																																																																																							
28	20,0	2787	1440,0	1,775	0,694	108,912	19,463	79,3																																																																																																																																																																																																																																																																																																																																																																							
29	22,0	2981	1455,0	1,948	0,687	109,097	19,647	166,2																																																																																																																																																																																																																																																																																																																																																																							
30	24,0	3173	1484,0	2,280	0,674	109,453	20,003	85,7																																																																																																																																																																																																																																																																																																																																																																							
31	26,0	3366	1513,0	2,612	0,661	109,807	20,358	86,3																																																																																																																																																																																																																																																																																																																																																																							
32	20,0	2785	1459,0	1,994	0,685	109,146	19,697	139,5																																																																																																																																																																																																																																																																																																																																																																							
33	18,0	2592	1438,0	1,752	0,695	108,888	19,438	118,3																																																																																																																																																																																																																																																																																																																																																																							
34	10,0	1819	1345,0	0,677	0,743	107,737	18,287	105,4																																																																																																																																																																																																																																																																																																																																																																							
35	8,0	1630	1287,0	0,000	0,777	107,012	17,563	40,7																																																																																																																																																																																																																																																																																																																																																																							
36	6,0	1443	1211,0	-0,894	0,826	106,056	16,607	30,2																																																																																																																																																																																																																																																																																																																																																																							
37	4,0	1255	1146,0	-1,664	0,873	105,231	15,782	35,0																																																																																																																																																																																																																																																																																																																																																																							
38	2,0	1068	1071,0	-2,561	0,934	104,272	14,822	29,6																																																																																																																																																																																																																																																																																																																																																																							
I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione																																																																																																																																																																																																																																																																																																																																																																															
FIELD LIMITS																																																																																																																																																																																																																																																																																																																																																																															
min	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop																																																																																																																																																																																																																																																																																																																																																																							
	12,0	2021,7	1287,0	0,0	0,8	107,0	17,6	primo																																																																																																																																																																																																																																																																																																																																																																							
max	26,0	3365,9	1513,0	2,6	0,7	109,8	20,4	carico																																																																																																																																																																																																																																																																																																																																																																							
	8,0	1654,2	1078,0	-2,5	0,9	104,4	14,9	I																																																																																																																																																																																																																																																																																																																																																																							
min	4,0	1265,2	1056,0	-2,7	0,9	104,1	14,6																																																																																																																																																																																																																																																																																																																																																																								
	12,0	2021,7	1287,0	0,0	0,8	107,0	17,6	II																																																																																																																																																																																																																																																																																																																																																																							
max	8,0	1633,1	1262,0	-0,3	0,8	106,7	17,2																																																																																																																																																																																																																																																																																																																																																																								
	26,0	3365,9	1513,0	2,6	0,7	109,8	20,4	III																																																																																																																																																																																																																																																																																																																																																																							
min	10,0	1819,3	1345,0	0,7	0,7	107,7	18,3																																																																																																																																																																																																																																																																																																																																																																								

| first load **4,2** cmc/Mpa | | | |
| unload **3,6** cmc/Mpa | | | |

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S4	probe depth m	99,5	code	2	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST NORTH	date	20.09.21	pag 2/3	

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE			
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro				DATA		ELASTICITY MODULUS Ei										
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)			
				symbol	datum	1	8,0	4,0					213			
				γnsoil	2,2	2	12,0	8,0					192			
				W (ml)	99,5	3	26,0	10,0					116			
				v	0,45	4										
				vo (cmc)	2984	5										
				do (mm)	89,45	DEFORMATION MODULUS Ti										
				σv (kPa)	2189	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)	
				height mt		1	8,0	12,0							22	
						2	12,0	8,0							22	
						3	26,0	12,0							75	
						4										
						5										
				GLOBAL DEFORMATION MODULUS EG												
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)			
Ei = (1+ ν) Φ Pax - Pmin		Ey= (EII+EIII)/2			26,0	12,0							75			
dmax - dmin		Ey= EIII		DIAMETER			F		F		F		F			
				begining diameter (mm)									107,012			
DEFORMATION MODULUS Ti				final diameter (mm)									109,807			
Ti = (1+ ν) Φ Pi - Pi-1				range mm									2,795			
Xi - Xi-1				DM loop mininum displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS									
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		1465		EG (MPa)		75	
GLOBAL DEFORMATION MODULUS EG				bar	0	120	240	0	Pf creep pressure (KPa)		3366		E (MPa)		116	
EG = (1+ ν) Φ Pmax - Po				8,0	10,997	10,997	10,997	14,912	PL limit pres. (KPa) Cassan >		4649		E/P/L		23,94	
dmax - do				12,0	11,342	11,342	11,342	17,563	PL' net limit pres (KPa) >		3117		EG/Ey		0,64	
				26,0	11,692	11,692	11,692	20,358	Ko lateral coeff at rest (KPa)		0,70		cu coesion (KPa) johnson >		490	
									Pho lateral pressure (KPa)		1532		φ friction angle (°) >			



TRIVELSONDA

Perforazioni ed esplorazioni del sottosuolo

DILATOMETRIC ROCK TEST DRT

mod DVT REV3. 20 settembre 2020

borehole

S4

probe depth m

99,5

code

2

Cilent:

FROSIO NEXT

job

2140

v. accept.

2140

Project

IMPIANTO SERRA DEL CORLO

report

2140

DRT

site

GRAVINA DI PUGLIA

coordinates

EAST

NORTH

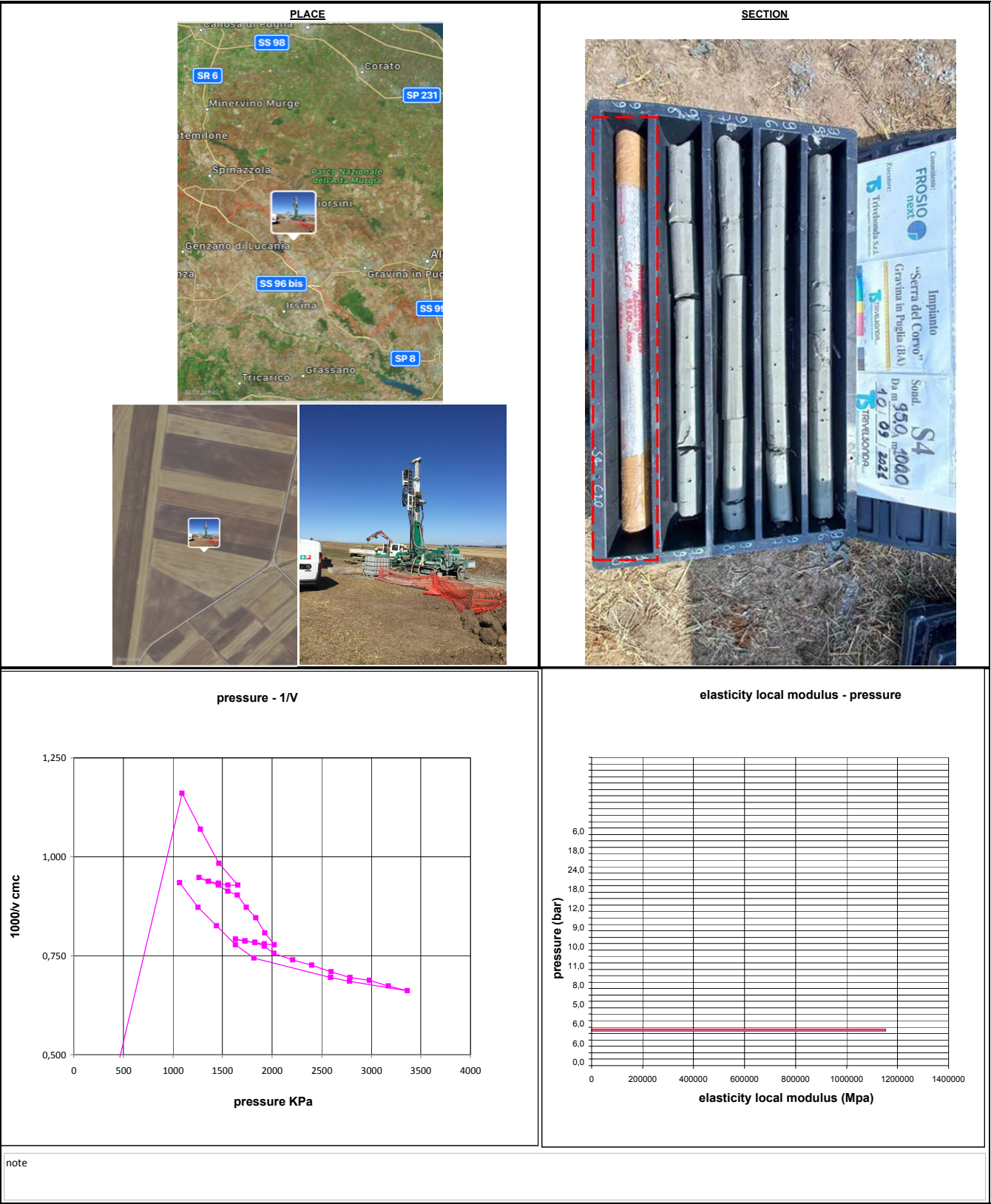
date

20.09.21

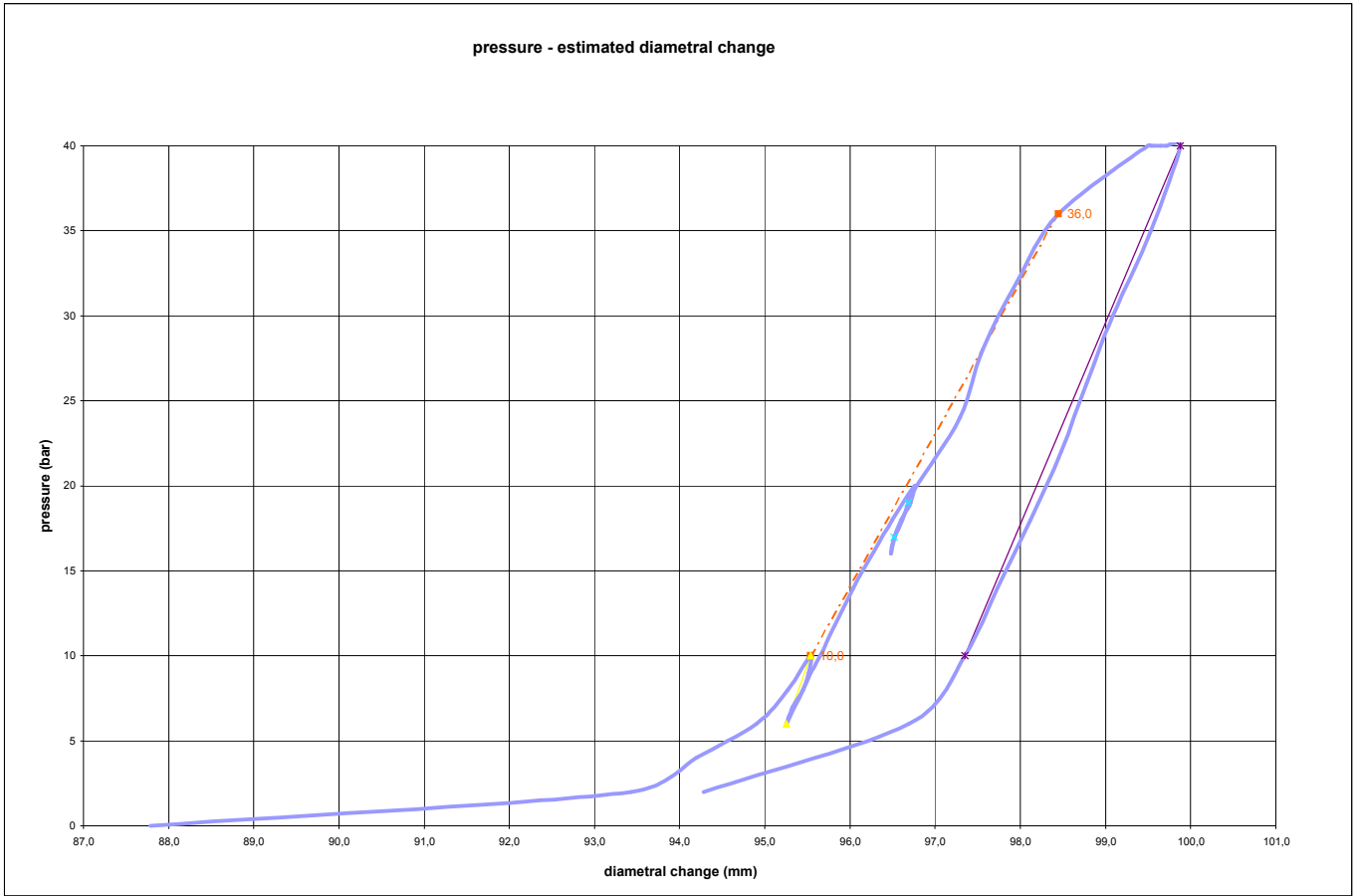
pag

3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

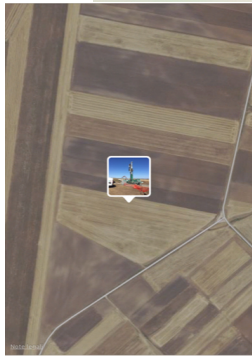
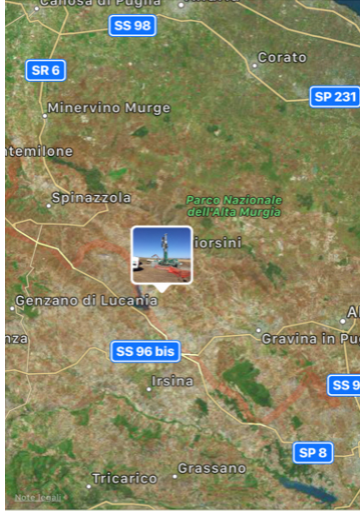


DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE			
Legend: H = test depth W = water table depth v = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro	DATA			ELASTICITY MODULUS Ei								
				loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)		
	symbol	datum	1	10,0	6,0				188			
	ynsoil	2,2	2	19,0	17,0				158			
	W (ml)	129,5	3	40,0	10,0				160			
	v	0,45	4									
	vo (cmc)	2984	5									
	do (mm)	87,79	DEFORMATION MODULUS Ti									
	σv (kPa)	2849	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)			
	height mt		1	10,0	10,0							
			2	19,0	10,0				105			
			3	40,0	19,0				88			
			4									
			5									
	GLOBAL DEFORMATION MODULUS EG											
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated				Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)	
Ei = (1+ v) Φ Pax - Pmin		Ey= (EII+EIII)/2				36,0	10,0				120	
dmax - dmin		Ey= EIII			DIAMETER			F	F	F	F	
DEFORMATION MODULUS Ti Ti = (1+ v) Φ Pi - Pi-1 Xi - Xi-1				beginning diameter (mm)							95,540	
				final diameter (mm)								99,875
				range mm								4,335
				DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS					
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	2032	EG (MPa)	120
GLOBAL DEFORMATION MODULUS EG EG = (1+ v) Φ Pmax - Po dmax - do				bar	0	120	240	0	Pf creep pressure (KPa)	4748	E (MPa)	160
				10,0	10,997	10,997	10,997	7,755	PL limit pres. (KPa) Cassan >	6675	E/PL	25,66
				19,0	11,342	11,342	11,342	8,900	PL' net limit pres (KPa) >	4681	EG/Ey	0,75
				40,0	11,692	11,692	11,692	12,090	Ko lateral coeff at rest (KPa)	0,70	cu coesion (KPa) johnson >	693
									Pho lateral pressure (KPa)	1994	φ friction angle (°) >	

borehole	S4	probe depth m	129,5	code	3
Client:	FROSIO NEXT	job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	20.09.21
			NORTH	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

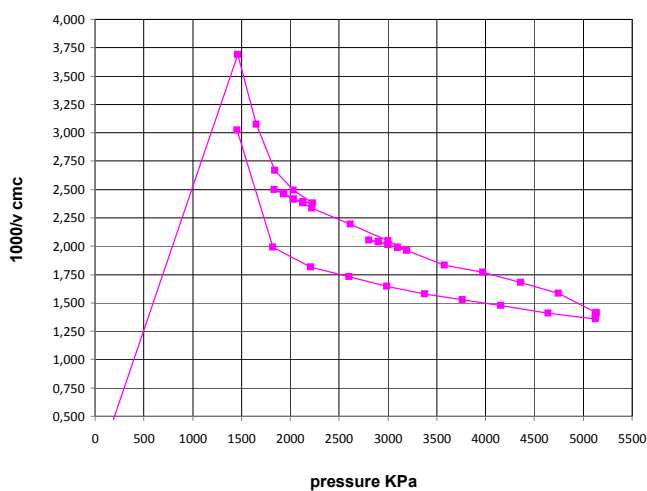
PLACE



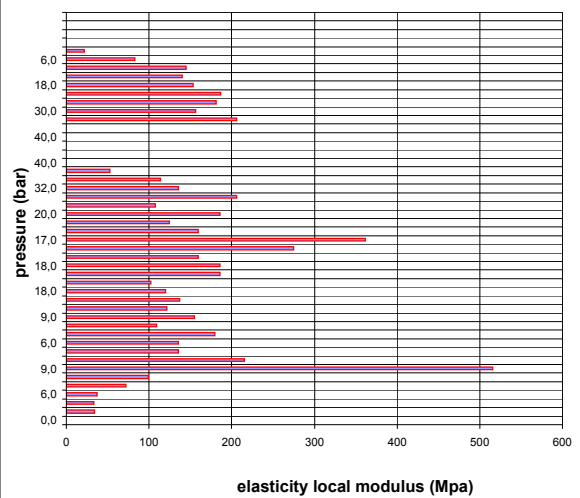
SECTION



pressure - 1/V



elasticity local modulus - pressure



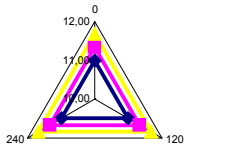
note

	borehole	S4	probe depth m	149,5	mod DVT REV3. 20 settembre 2020		
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
	site	GRAVINA DI PUGLIA	coordinates	EAST	date	20.09.21	pag
				NORTH			1/3

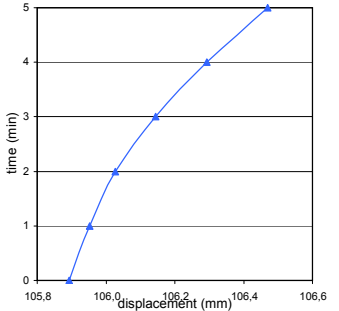
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole				S4			
test		4		depth		149,5	
slope (degree)		90		core barrel		HQ	
Device: GEOANALISI VM02							
Orientation capteur		C1=		Standard method:		ISRM 1987	
Probe diam		90		Borehole diam		VEDI DIAM	
Meteo				Temperatu re			
lithotype ARGILLA DA MARNOSAA DEBOLM MARNOSA							
water table		40,0		POCKET PENETRO METER			
Temps mir		PBAR		MM			
0		40,00		105,89			
1		40,00		105,95			
2		40,00		106,03			
3		40,00		106,14			
4		40,00		106,29			
5		40,00		106,47			
PROBE SCHEME							
		rod adaptor electronic device double action piston expandable cylinder					
PROBE CALIBRATION							
probe							
membrane		CAUCCIU' ARMATO					
measure cell height (cm)		47,50					
V0 cell volume at rest (cmc)		2984					
lenght cable (mt)		100					
Volume initial Vi (cmc)		312					
diam calibration tube (cm)		9,4					
tube calibration volume cmc		3296					
Calibration in air							
coeff m		0,11		Kpa/cmc			
Confined calibration							
first load		4,2		cmc/Mpa			
unload		3,6		cmc/Mpa			

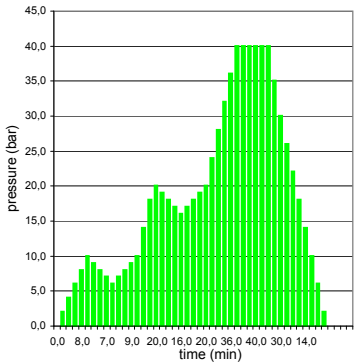
direction - displacement



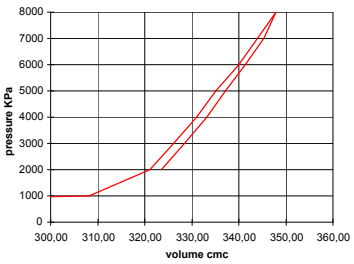
creep diagram



pressure - time

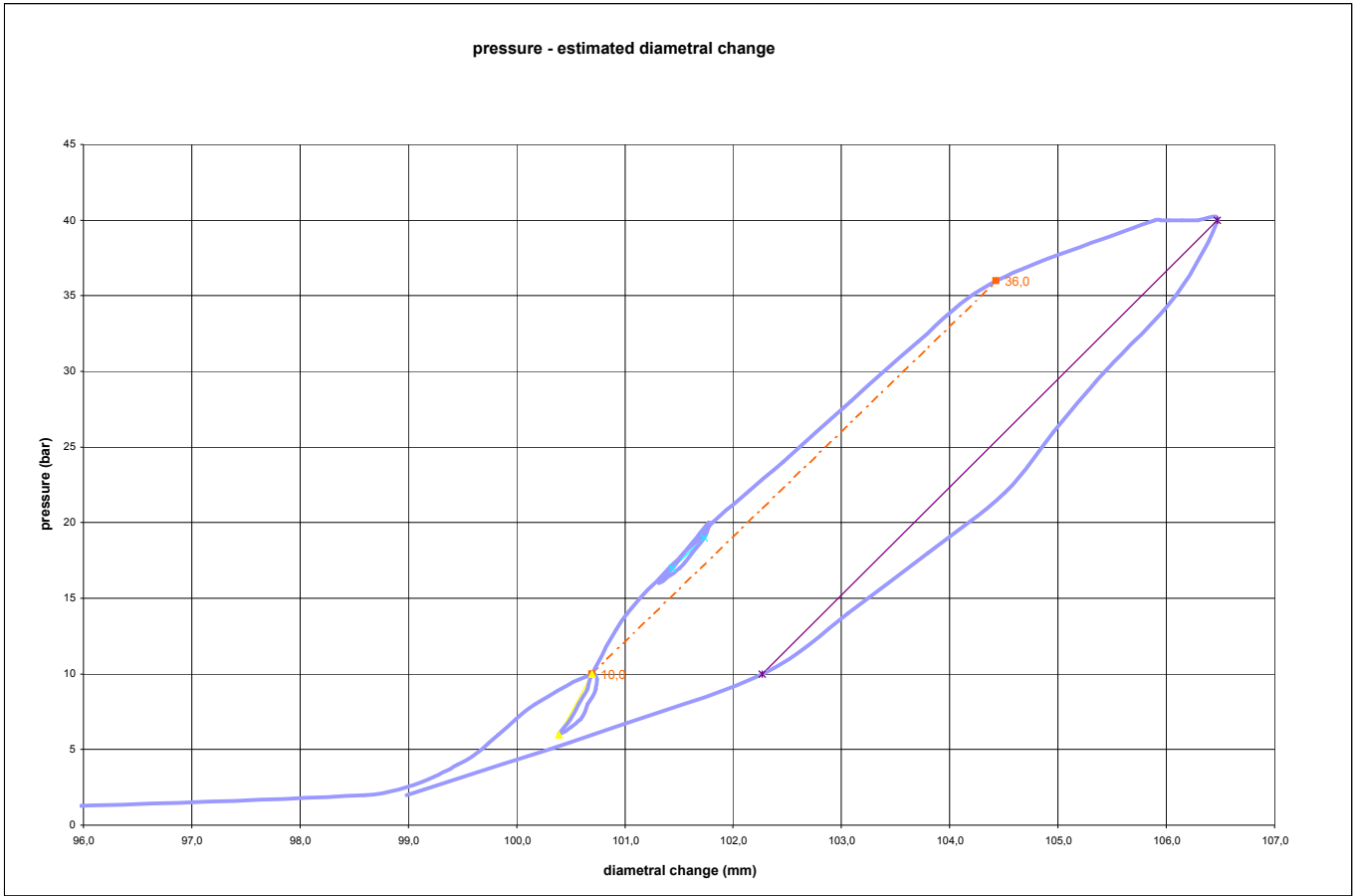


calibration



PRESSURE		P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo
STEP	bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa	
0	0,0	0	0,0	-11,172	0,000	89,449	0,000	0,0	
1	2,0	1618	641,3	-2,092	1,559	98,593	9,144	24,2	
2	4,0	1806	705,0	-1,235	1,418	99,455	10,006	31,4	
3	6,0	1999	732,9	-0,863	1,365	99,830	10,381	74,5	
4	8,0	2193	758,4	-0,523	1,319	100,172	10,723	81,9	
5	10,0	2384	797,9	0,000	1,253	100,699	11,250	53,0	
6	9,0	2286	800,2	0,031	1,250	100,730	11,281	-461,9	
7	8,0	2189	794,4	-0,046	1,259	100,653	11,204	184,1	
8	7,0	2091	789,8	-0,107	1,266	100,591	11,142	230,3	
9	6,0	1995	774,7	-0,307	1,291	100,390	10,940	69,7	
10	7,0	2092	782,8	-0,200	1,277	100,498	11,049	130,5	
11	8,0	2189	788,6	-0,123	1,268	100,576	11,126	183,6	
12	9,0	2287	794,4	-0,046	1,259	100,653	11,204	183,9	
13	10,0	2384	797,9	0,000	1,253	100,699	11,250	308,0	
14	14,0	2774	822,3	0,322	1,216	101,023	11,574	175,8	
15	18,0	3162	861,8	0,841	1,160	101,546	12,097	108,9	
16	20,0	3356	879,2	1,070	1,137	101,776	12,327	124,4	
17	19,0	3258	875,8	1,024	1,142	101,731	12,281	314,1	
18	18,0	3161	867,6	0,918	1,153	101,623	12,174	133,4	
19	17,0	3064	858,3	0,796	1,165	101,500	12,051	116,3	
20	16,0	2968	844,4	0,612	1,184	101,316	11,867	76,9	
21	17,0	3065	853,7	0,735	1,171	101,439	11,990	116,0	
22	18,0	3162	861,8	0,841	1,160	101,546	12,097	133,0	
23	19,0	3259	873,4	0,994	1,145	101,700	12,251	92,9	
24	20,0	3356	881,6	1,100	1,134	101,807	12,358	133,6	
25	24,0	3742	931,7	1,753	1,073	102,464	13,015	87,1	
26	28,0	4129	979,5	2,372	1,021	103,088	13,639	92,5	
27	32,0	4516	1027,3	2,988	0,973	103,708	14,259	93,5	
28	36,0	4902	1083,4	3,705	0,923	104,431	14,981	80,6	
29	40,0	5281	1198,1	5,158	0,835	105,893	16,443	39,5	
30	40,0	5281	1202,8	5,216	0,831	105,952	16,503	-1,4	
31	40,0	5280	1208,6	5,290	0,827	106,026	16,577	-1,4	
32	40,0	5279	1218,0	5,408	0,821	106,145	16,695	-1,4	
33	40,0	5278	1229,7	5,555	0,813	106,293	16,843	-1,4	
34	40,0	5276	1243,8	5,731	0,804	106,470	17,021	-1,4	
35	35,0	4789	1213,4	5,350	0,824	106,086	16,637	195,5	
36	30,0	4305	1161,9	4,701	0,861	105,433	15,984	113,8	
37	26,0	3916	1124,5	4,228	0,889	104,956	15,507	124,1	
38	22,0	3528	1089,4	3,782	0,918	104,508	15,058	131,4	
39	18,0	3142	1034,5	3,080	0,967	103,801	14,351	82,5	
40	14,0	2756	977,3	2,344	1,023	103,060	13,610	78,1	
41	10,0	2371	916,7	1,558	1,091	102,268	12,819	72,5	
42	6,0	1992	797,9	0,001	1,253	100,700	11,250	35,5	
43	2,0	1614	670,3	-1,701	1,492	98,986	9,537	31,9	
I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione									
FIELD LIMITS									
min	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop	
	10,0	2384,4	797,9	0,0	1,3	100,7	11,2	primo carico	
max	36,0	4902,2	1083,4	3,7	0,9	104,4	15,0		
	10,0	2384,4	797,9	0,0	1,3	100,7	11,2	I	
min	6,0	1994,6	774,7	-0,3	1,3	100,4	10,9		
	19,0	3258,3	875,8	1,0	1,1	101,7	12,3	II	
max	17,0	3064,7	853,7	0,7	1,2	101,4	12,0		
	40,0	5276,1	1243,8	5,7	0,8	106,5	17,0	III	
min	10,0	2370,7	916,7	1,6	1,1	102,3	12,8		

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

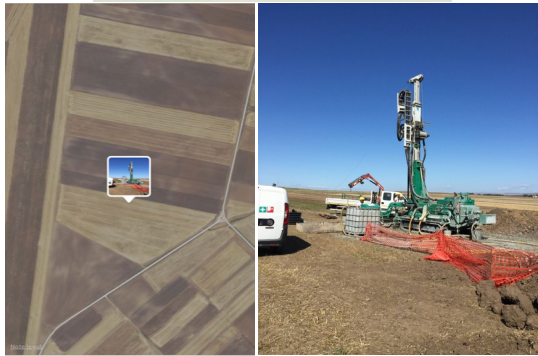
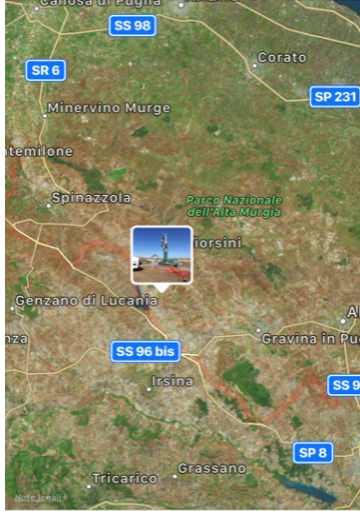


DATA PROCESSING							SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE		
Legend: H = test depth W = water table depth v = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro	DATA			ELASTICITY MODULUS Ei								
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)	
	symbol	datum	1	10,0	6,0					184		
	γnsoil	2,2	2	19,0	17,0					97		
	W (ml)	149,5	3	40,0	10,0					101		
	v	0,45	4									
	vo (cmc)	2984	5									
	do (mm)	89,45	DEFORMATION MODULUS Ti									
	σv (kPa)	3289	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)	T3 (Mpa)	Tm (Mpa)		
	height mt		1	10,0	10,0					#DIV/0!		
		2	19,0	10,0					124			
		3	40,0	19,0					62			
		4										
		5										
				GLOBAL DEFORMATION MODULUS EG								
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)	
Ei = (1+ v) Φ Pax - Pmin		Ey= (EII+EIII)/2			36,0	10,0					99	
dmax - dmin		Ey= EIII		DIAMETER			F	F	F	F		
DEFORMATION MODULUS Ti Ti = (1+ v) Φ Pi - Pi-1 Xi - Xi-1				beginning diameter (mm)							100,699	
				final diameter (mm)								106,470
				range mm								5,771
DM loop minimun displacement				DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS								
Pbar		C1	C2	C3	Cm	Po initial pressure (KPa)		2384	EG (MPa)		99	
GLOBAL DEFORMATION MODULUS EG		bar	0	120	240	0	Pf creep pressure (KPa)		4902	E (MPa)		101
EG = (1+ v) Φ Pmax - Po		10,0	10,997	10,997	10,997	11,250	PL limit pres. (KPa) Cassan >		6722	E/PL		22,29
dmax - do		19,0	11,342	11,342	11,342	12,281	PL' net limit pres (KPa) >		4420	EG/Ey		0,98
		40,0	11,692	11,692	11,692	17,021	Ko lateral coeff at rest (KPa)		0,70	cu coesion (KPa) johnson>		697
							Pho lateral pressure (KPa)		2302	φ friction angle (°) >		

borehole	S4	probe depth m	149,5	code	4
Client:	FROSIO NEXT	job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	20.09.21
			NORTH	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

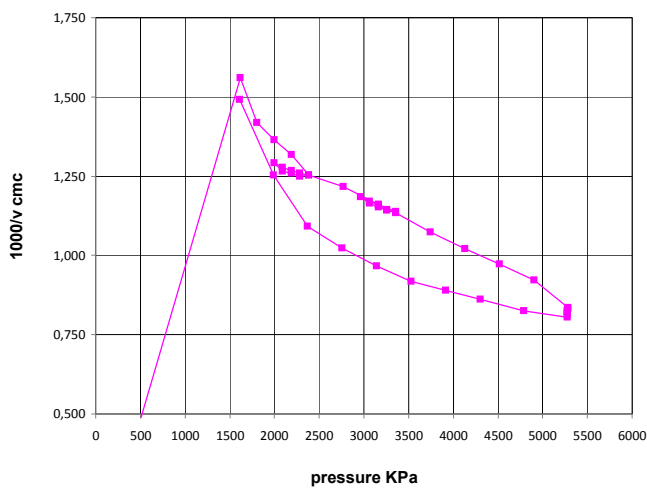
PLACE



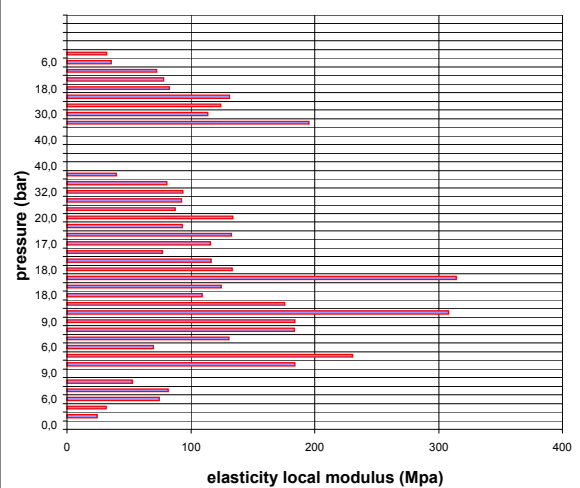
SECTION



pressure - 1/V



elasticity local modulus - pressure



note

	borehole	S4	probe depth m	179,5	mod DVT REV3. 20 settembre 2020		
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
	site	GRAVINA DI PUGLIA	coordinates	EAST	date	20.09.21	pag
				NORTH			1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole				S4			
test	5	depth	179,5				
slope (degree)	core barrel						
90	HQ						
Device:							
GEOANALISI VM02							
Orientation capteur	Standard method:						
C1=	ISRM 1987						
Probe diam	90	Borehole diam	VEDI DIAM				
Meteo	Temperatu re						
lithotype							
ARGILLA DA MARNOSAA							
DEBOLM MARNOSA							
water table	40,0	POCKET PENETRO METER					
Temps mir	PBAR	MM					
0	40,00	102,30					
1	40,00	102,32					
2	40,00	102,37					
3	40,00	102,47					
4	40,00	102,54					
5	40,00	102,73					

direction - displacement			

creep diagram			

pressure - time			

calibration			

PROBE SCHEME			

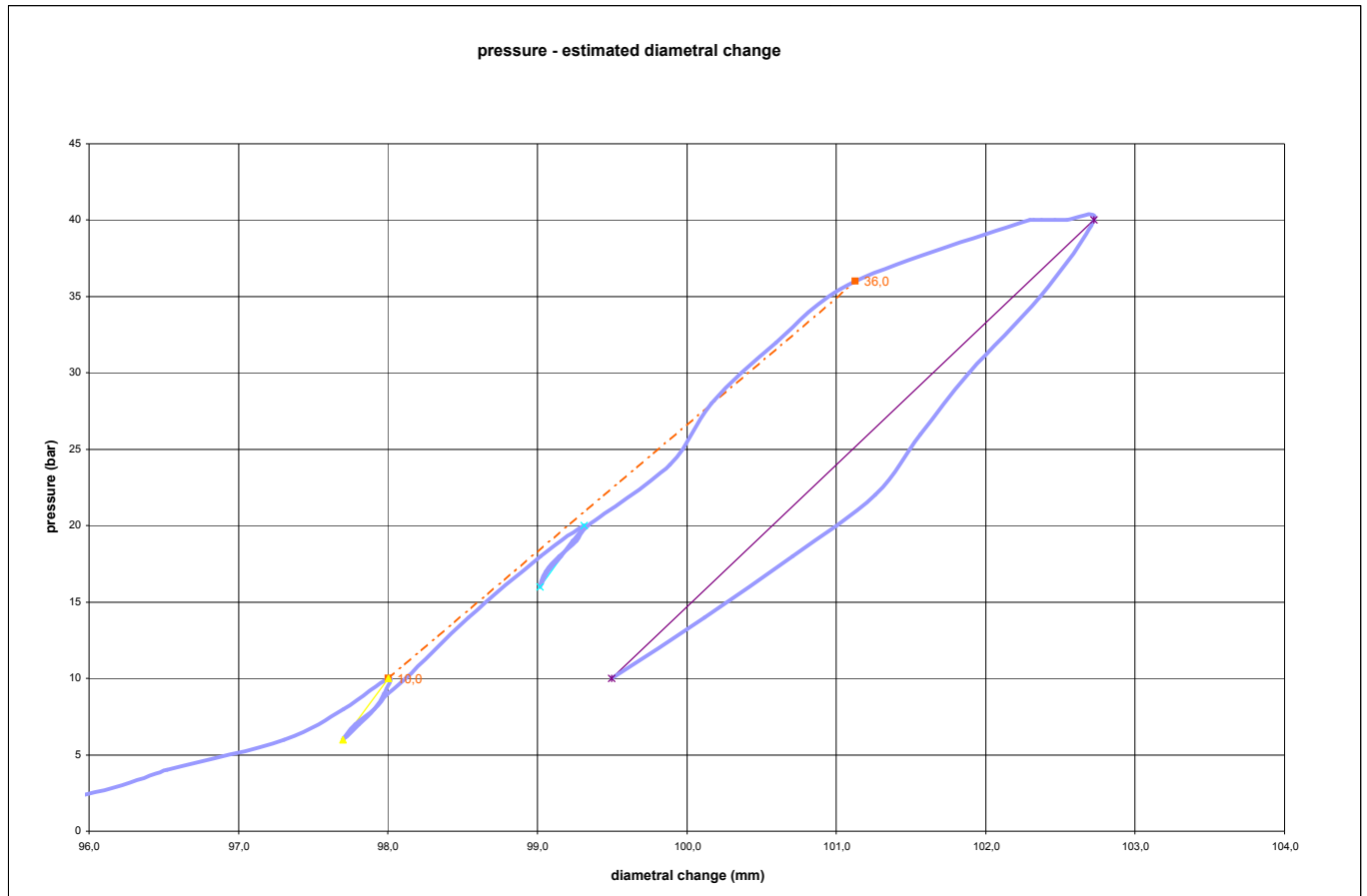
PROBE CALIBRATION			
probe			
membrane	CAUCCIU' ARMATO		
measure cell height (cm)	47,50		
V0 cell volume at rest (cmc)	2984		
lenght cable (mt)	100		
Volume initial Vi (cmc)	312		
diam calibration tube (cm)	9,4		
tube calibration volume cmc	3296		
Calibration in air			
coeff m	0,11	Kpa/cmc	
Confined calibration			
first load	4,2	cmc/Mpa	
unload	3,6	cmc/Mpa	

PRESSURE	P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo
STEP	bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa
0	0,0	0	0,0	-8,728	0,000	89,449	0,000	0,0
1	2,0	1941	429,3	-2,384	2,329	95,667	6,218	41,9
2	4,0	2130	490,7	-1,511	2,038	96,523	7,074	30,7
3	6,0	2319	547,2	-0,713	1,827	97,305	7,856	34,0
4	8,0	2511	576,3	-0,304	1,735	97,705	8,256	67,9
5	10,0	2705	598,1	0,000	1,672	98,004	8,554	92,0
6	9,0	2607	596,0	-0,029	1,678	97,975	8,526	485,6
7	8,0	2510	591,3	-0,094	1,691	97,911	8,462	216,3
8	7,0	2413	583,7	-0,202	1,713	97,806	8,357	131,0
9	6,0	2316	576,0	-0,309	1,736	97,701	8,252	130,7
10	7,0	2413	581,7	-0,229	1,719	97,779	8,329	177,2
11	8,0	2510	591,3	-0,094	1,691	97,911	8,462	103,6
12	9,0	2607	597,7	-0,006	1,673	97,997	8,548	159,7
13	10,0	2704	606,7	0,120	1,648	98,121	8,672	111,5
14	14,0	3091	637,4	0,546	1,569	98,539	9,090	132,2
15	18,0	3479	673,0	1,040	1,486	99,023	9,574	114,6
16	20,0	3672	694,4	1,335	1,440	99,311	9,862	96,3
17	19,0	3575	688,7	1,256	1,452	99,235	9,786	182,8
18	18,0	3478	683,0	1,178	1,464	99,158	9,709	182,5
19	17,0	3380	676,4	1,086	1,479	99,068	9,619	154,7
20	16,0	3283	672,7	1,036	1,487	99,019	9,569	281,8
21	17,0	3381	675,4	1,073	1,481	99,055	9,605	387,8
22	18,0	3478	682,0	1,165	1,466	99,145	9,695	154,6
23	19,0	3575	690,7	1,284	1,448	99,262	9,813	118,9
24	20,0	3672	696,4	1,362	1,436	99,338	9,889	182,9
25	24,0	4058	737,0	1,921	1,357	99,886	10,436	102,0
26	28,0	4447	757,7	2,203	1,320	100,163	10,714	203,6
27	32,0	4835	790,4	2,648	1,265	100,599	11,150	129,3
28	36,0	5222	830,0	3,186	1,205	101,126	11,677	107,3
29	40,0	5603	918,7	4,379	1,088	102,295	12,846	48,1
30	40,0	5603	920,7	4,406	1,086	102,321	12,872	-1,3
31	40,0	5602	924,7	4,459	1,081	102,374	12,924	-1,3
32	40,0	5601	931,7	4,553	1,073	102,465	13,016	-1,3
33	40,0	5601	937,7	4,633	1,066	102,544	13,094	-1,3
34	40,0	5599	951,7	4,819	1,051	102,727	13,277	-1,3
35	35,0	5113	924,2	4,452	1,082	102,366	12,917	200,6
36	30,0	4628	887,9	3,965	1,126	101,890	12,440	150,7
37	26,0	4240	863,0	3,632	1,159	101,563	12,114	175,3
38	22,0	3851	840,1	3,322	1,190	101,259	11,810	188,2
39	18,0	3464	798,6	2,760	1,252	100,709	11,259	102,9
40	14,0	3078	754,4	2,158	1,326	100,118	10,669	95,2
41	10,0	2692	708,2	1,525	1,412	99,498	10,049	90,2

I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione								
FIELD LIMITS								
	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	10,0	2704,6	598,1	0,0	1,7	98,0	8,6	primo
	36,0	5221,6	830,0	3,2	1,2	101,1	11,7	carico
max	10,0	2704,6	598,1	0,0	1,7	98,0	8,6	I
	6,0	2315,9	576,0	-0,3	1,7	97,7	8,3	
max	20,0	3671,9	694,4	1,3	1,4	99,3	9,9	II
	16,0	3283,1	672,7	1,0	1,5	99,0	9,6	
max	40,0	5599,0	951,7	4,8	1,1	102,7	13,3	III
	10,0	2692,0	708,2	1,5	1,4	99,5	10,0	

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S4	probe depth m	179,5	code	5	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST NORTH	date	20.09.21	pag 2/3	

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

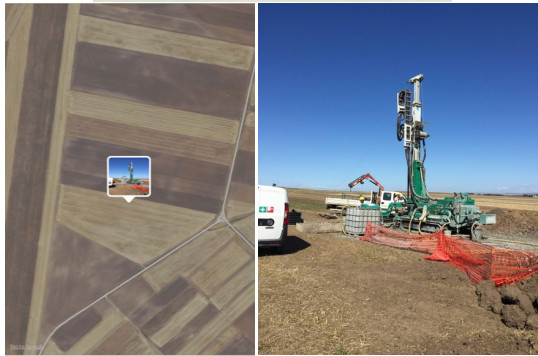
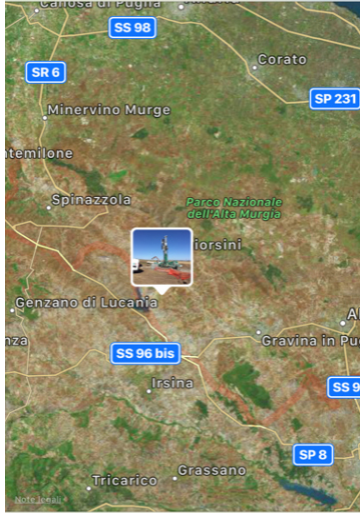


DATA PROCESSING				SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE					
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro				ELASTICITY MODULUS Ei											
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)		
				symbol	datum	1	10,0	6,0					183		
				γsoil	2,2	2	20,0	16,0					189		
				W (ml)	179,5	3	40,0	10,0					128		
				ν	0,45	4									
				vo (cmc)	2984	5									
				do (mm)	89,45	DEFORMATION MODULUS Ti									
				σv (kPa)	3949	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)	Tm (Mpa)	
				height mt		1	10,0	10,0						#DIV/0!	
						2	20,0	10,0						105	
						3	40,0	20,0						80	
						4									
						5									
				GLOBAL DEFORMATION MODULUS EG											
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)		
Ei = (1+ ν) Φ Pax - Pmin		Ey= (EII+EIII)/2			36,0	10,0							115		
dmax - dmin		Ey= EIII		DIAMETER			F		F		F		F		
DEFORMATION MODULUS Ti Ti = (1+ ν) Φ Pi - Pi-1 Xi - Xi-1				beginning diameter (mm)									98,004		
				final diameter (mm)									99,311		
				range mm									1,308		
				DM loop mininum displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS								
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		2705		EG (MPa)		115
GLOBAL DEFORMATION MODULUS EG				bar	0	120	240	0	Pf creep pressure (KPa)		5222		E (MPa)		128
EG = (1+ ν) Φ Pmax - Po				10,0	10,997	10,997	10,997	8,554	PL limit pres. (KPa) Cassan >		6942		E/PL		27,42
dmax - do				20,0	11,342	11,342	11,342	9,862	PL' net limit pres (KPa) >		4177		EG/Ey		0,90
				40,0	11,692	11,692	11,692	13,277	Ko lateral coeff at rest (KPa)		0,70		cu coesion (KPa) johnson>		719
									Pho lateral pressure (KPa)		2764		φ friction angle (°) >		

borehole	S4	probe depth m	179,5	code	5
Client:	FROSIO NEXT	job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	20.09.21
			NORTH	pag	3/3

5,00

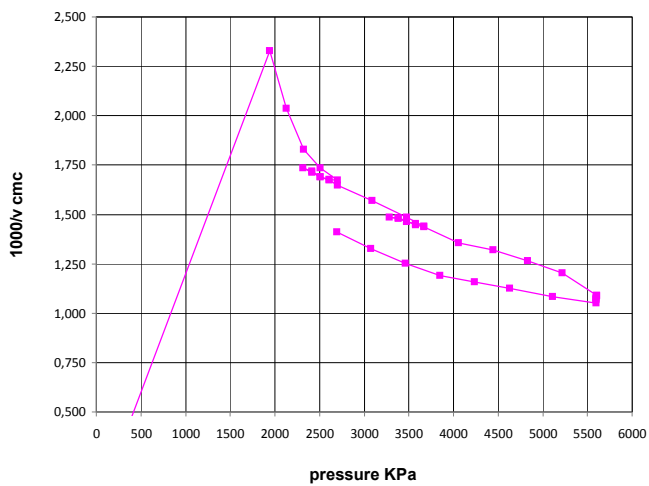
PLACE



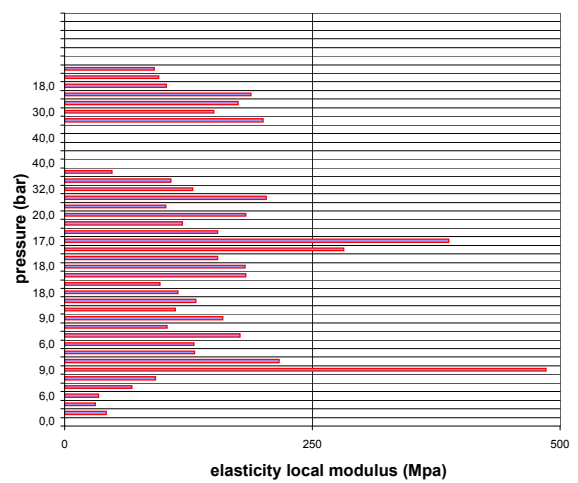
SECTION



pressure - 1/V



elasticity local modulus - pressure



note

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

PROBE SCHEME

rod adaptor

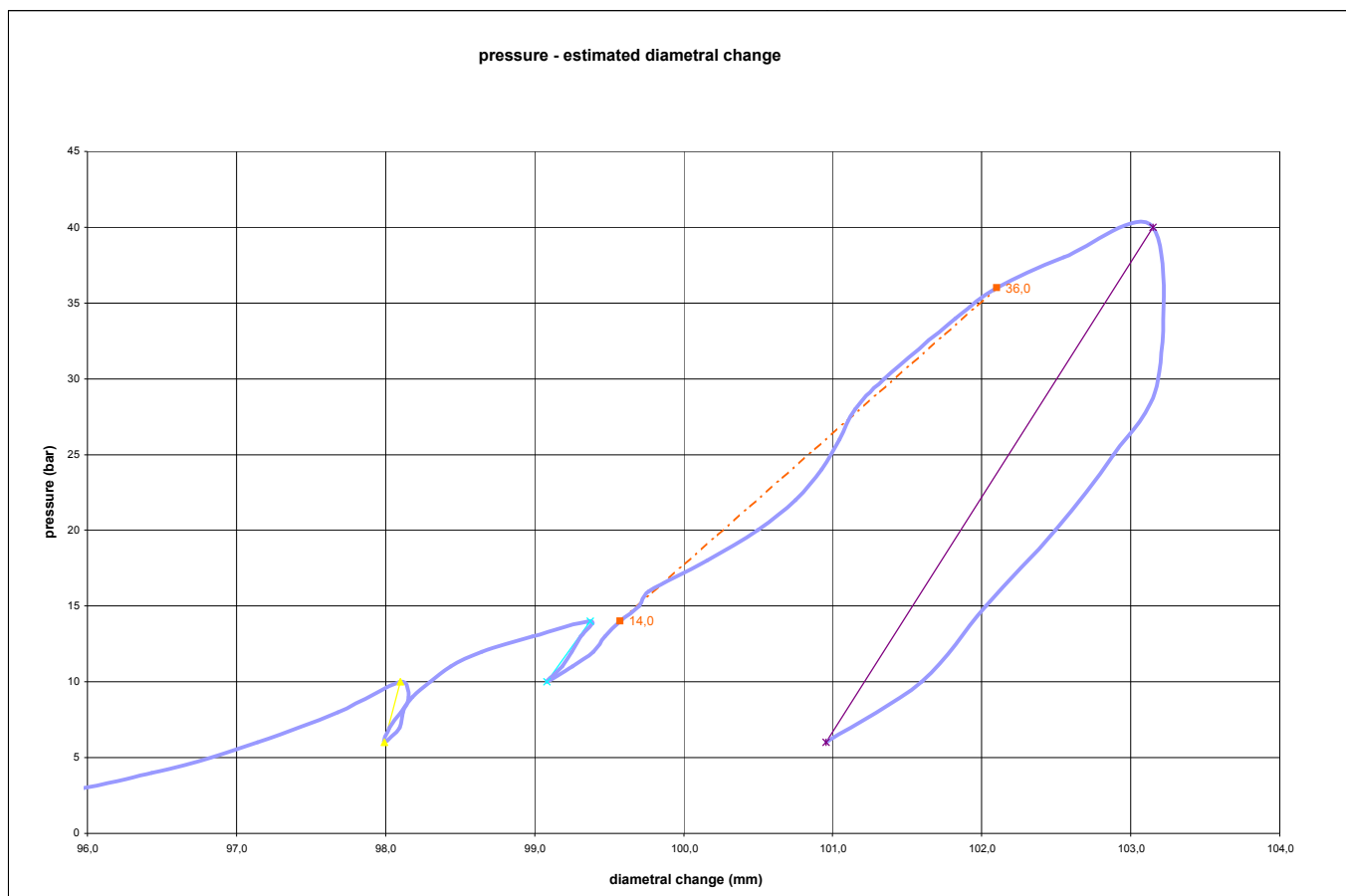
electronic device

double action piston

expandable cylinder

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S4	probe depth m	199,5	code	6	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST NORTH	date	20.09.21	pag 2/3	

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

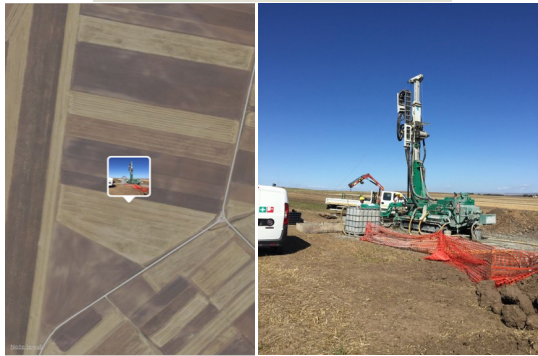
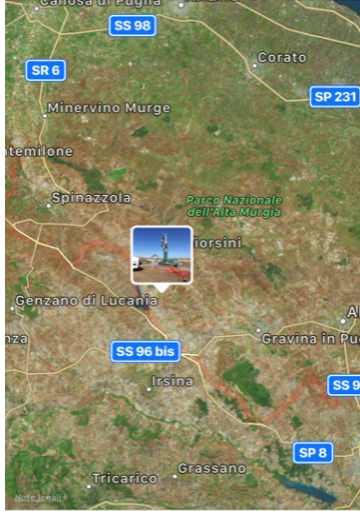


DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE				
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro				ELASTICITY MODULUS Ei													
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)				
				symbol	datum	1	10,0	6,0					537				
				γnsoil	2,2	2	14,0	10,0					195				
				W (ml)	199,5	3	40,0	6,0					217				
				ν	0,45	4											
				vo (cmc)	2984	5											
				Φ (mm)	89,45	DEFORMATION MODULUS Ti											
				Po (kPa)	4389	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)		
				height mt		1	10,0	14,0							37		
						2	14,0	10,0							43		
						3	40,0	14,0							96		
						4											
						5											
				GLOBAL DEFORMATION MODULUS EG													
ELASTICITY MODULUS Ei				ELASTICITY MODULUS Ey estimated													
Ei = (1+ ν) Φ Pax - Pmin				Ey= (EII+EIII)/2													
dmax - dmin				Ey= EIII													
DEFORMATION MODULUS Ti Ti = (1+ ν) Φ Pi - Pi-1 Xi - Xi-1				DIAMETER					F		F		F		F		
				begining diameter (mm)											99,573		
				final diameter (mm)											103,150		
				range mm											3,577		
				DM loop mininum displacement					DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS								
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		2900		EG (MPa)		121		
GLOBAL DEFORMATION MODULUS EG				bar	0	120	240	0	Pf creep pressure (KPa)		5400		E (MPa)		217		
EG = (1+ ν) Φ Pmax - Po				10,0	10,997	10,997	10,997	8,648	PL limit pres. (KPa) Cassan >		7030		E/PL		30,62		
dmax - do				14,0	11,342	11,342	11,342	9,922	PL' net limit pres (KPa) >		3958		EG/Ey		0,56		
				40,0	11,692	11,692	11,692	13,701	Ko lateral coeff at rest (KPa)		0,70		cu coesion (KPa) johnson>		728		
									Pho lateral pressure (KPa)		3072		φ friction angle (°) >				

borehole	S4	probe depth m	199,5	code	6
Client:	FROSIO NEXT	job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	20.09.21
			NORTH	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

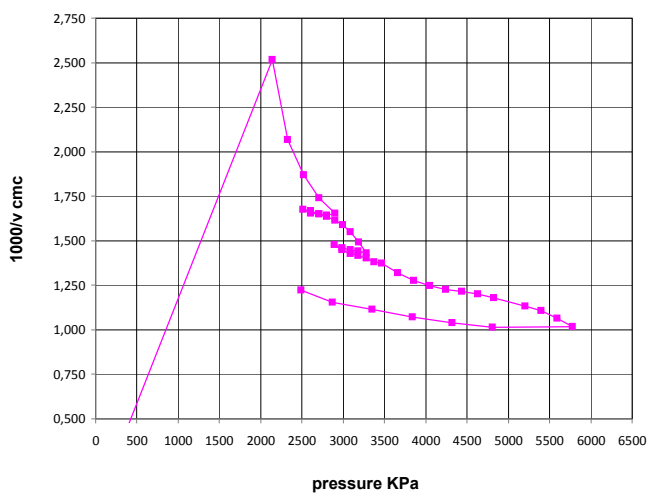
PLACE



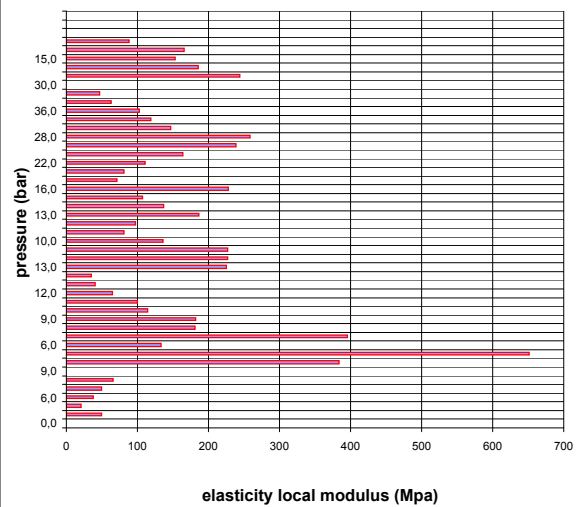
SECTION



pressure - 1/V



elasticity local modulus - pressure



note

pressure - estimated diametral change



Legend:

H = test depth
W = water table depth
 ν = Poisson ratio
 v_0 = cell initial volume
 d_0 = cell initial diameter
 Φ = borehole wall diameter
 P_0 = start pressure
 P_{max} = max loop pressure (MPa)
 P_{min} = min loop pressure (MPa)
 d_{max} = displacement at P max
 d_{min} = displacement at P min
 σ_v vertical total stress estimated

borehole	S5	probe depth m	50,5	code	1
Client:	FROSIO NEXT	job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	27.09.21
			NORTH	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

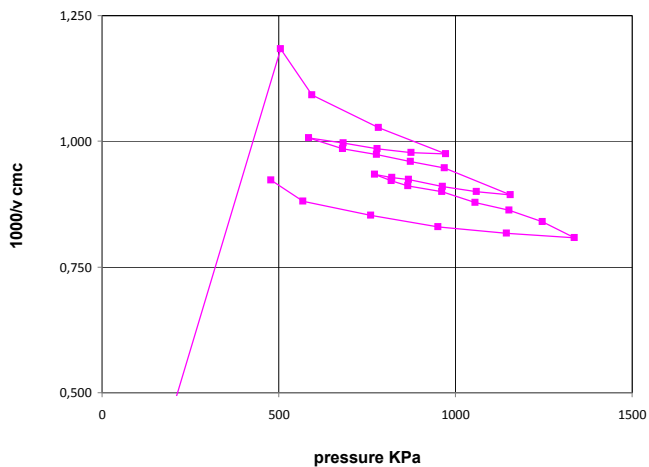
PLACE



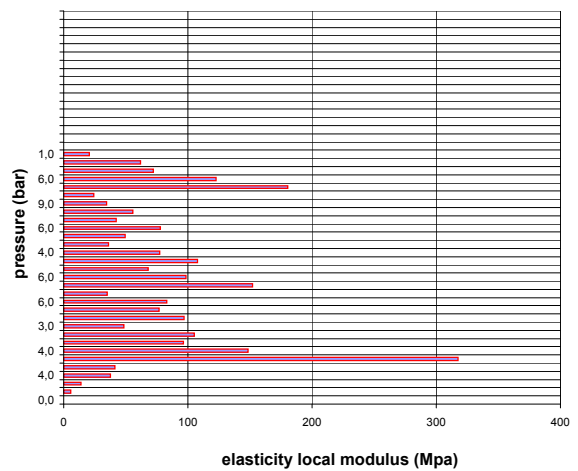
SECTION



pressure - 1/V



elasticity local modulus - pressure



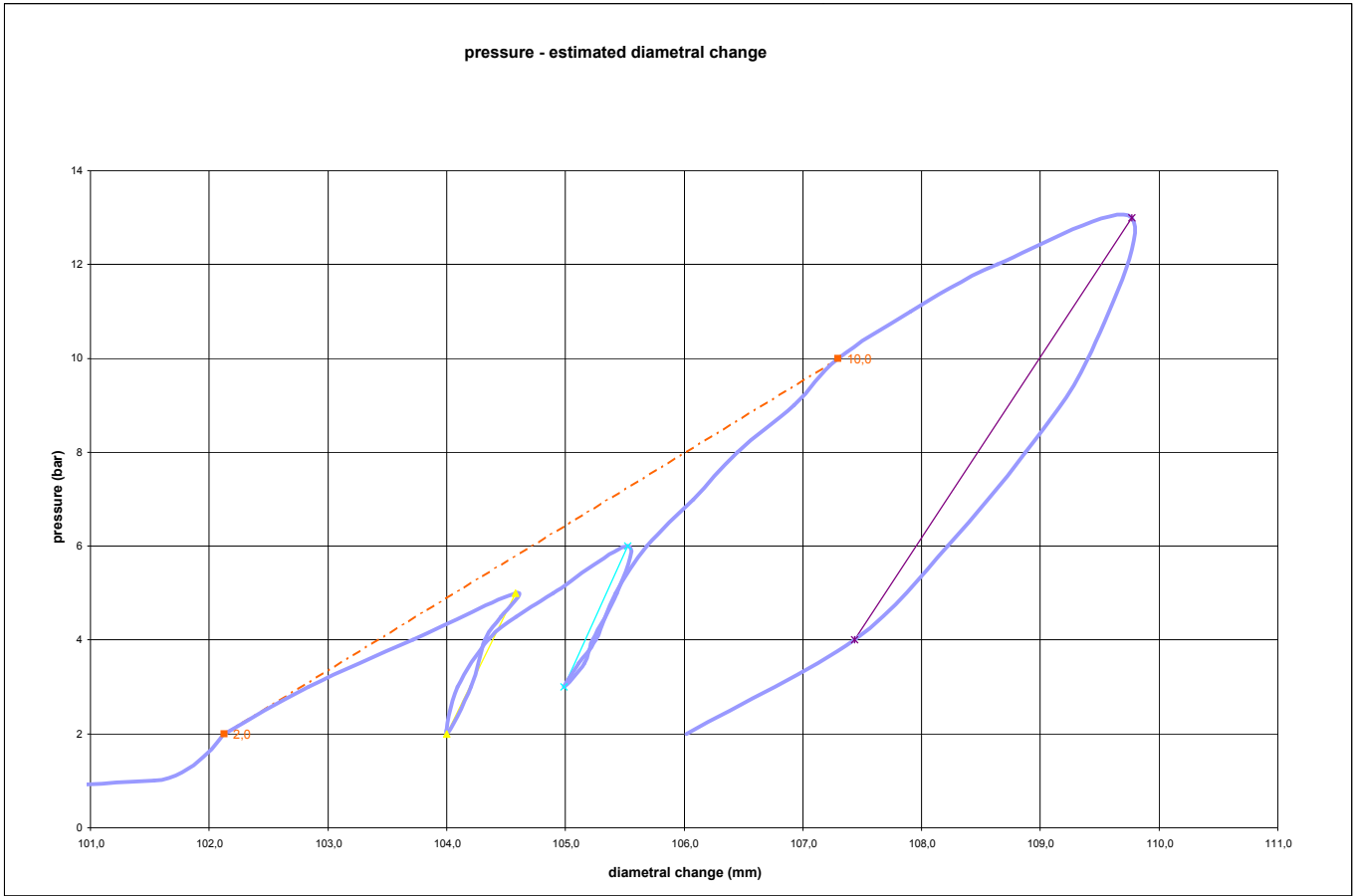
note

	borehole	S5	probe depth m	59,5	mod DVT REV3. 20 settembre 2020		
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT	
	site	GRAVINA DI PUGLIA	coordinates	EAST	date	27.09.21	pag
				NORTH			1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole				S5			
test		2		depth		59,5	
slope (degree)		90		core barrell		C.SEMPLICE 101MM	
Device:				GEOANALISI VM02			
Orientation capteur		C1=		Standard method:		ISRM 1987	
Probe diam		95		Borehole diam		VEDI DIAM	
Meteo				Temperatu re			
lithotype				LIMO ARGILLOSO SABBIOSO			
water table		30,0		POCKET PENETRO METER			
Temps mir		PBAR		MM			
rod adaptor				electronic device			
double action piston				expandable cylinder			
PROBE CALIBRATION				calibration			
probe				CAUCCIU' ARMATO			
measure cell height (cm)		47,50		V0 cell volume at rest (cmc)		2984	
lenght cable (mt)		100		Volume initial V1 (cmc)		312	
diam calibration tube (cm)		9,4		tube calibration volume cmc		3296	
Calibration in air				coeff m			
4,2		cmc/Mpa		3,6		cmc/Mpa	
first load				unload			
300,00				310,00			
320,00				330,00			
340,00				350,00			
360,00							
pressure KPa				volume cmc			
8000				7000			
6000				5000			
4000				3000			
2000				1000			
0							
300,00				310,00			
320,00				330,00			
340,00				350,00			
360,00							
time (min)				displacement (mm)			
5				4			
3				2			
1				0			
0,0				0,2			
0,4				0,6			
0,8				1,0			
1,2							
direction - displacement				creep diagram			
0				12,00			
10,00				11,00			
9,00				8,00			
7,00				6,00			
5,00				4,00			
3,00				2,00			
1,00				0,00			
240				120			
PRESSURE				STEP			
P		Pcorr		Vol		e c	
bar		Kpa		cmc		%	
1000/cmc		(mm)		(mm)		MPa	
0		0,0		0		-12,414	
1		1,0		594		861,0	
2		2,0		687		906,0	
3		3,0		779		960,0	
4		4,0		869		1028,0	
5		5,0		959		1094,9	
6		4,5		911		1085,5	
7		4,0		864		1075,0	
8		3,0		767		1066,0	
9		2,0		670		1050,0	
10		3,0		768		1057,0	
11		4,0		863		1077,0	
12		4,5		910		1095,5	
13		5,0		956		1119,9	
14		6,0		1049		1168,9	
15		5,0		951		1161,9	
16		4,0		855		1146,0	
17		3,5		807		1140,5	
18		3,0		760		1127,0	
19		3,5		807		1136,5	
20		4,0		855		1148,0	
21		5,0		952		1160,9	
22		6,0		1047		1181,9	
23		7,0		1142		1212,9	
24		8,0		1236		1241,9	
25		9,0		1330		1279,9	
26		10,0		1424		1309,9	
27		11,0		1517		1358,9	
28		12,0		1608		1417,9	
29		13,0		1695		1509,9	
30		10,0		1405		1479,9	
31		8,0		1214		1436,9	
32		6,0		1024		1383,9	
33		4,0		835		1321,0	
34		2,0		652		1208,0	
valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione		FIELD LIMITS		P		P corr	
min		2,0		686,9		906,0	
max		10,0		1424,4		1309,9	
max		5,0		959,2		1094,9	
min		2,0		670,4		1050,0	
max		6,0		1048,7		1168,9	
min		3,0		759,5		1127,0	
max		13,0		1695,4		1509,9	
min		4,0		835,3		1321,0	
min		4,0		835,3		1321,0	

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE		
Legend: H = test depth W = water table depth v = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro	DATA			ELASTICITY MODULUS Ei							
				loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)	
	symbol	datum	1	5,0	2,0				74		
	ynsoil	2,2	2	6,0	3,0				80		
	W (ml)	59,5	3	13,0	4,0				55		
	v	0,45	4								
	vo (cmc)	2984	5								
	do (mm)	89,45	DEFORMATION MODULUS Ti								
	σv (kPa)	1309	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)		
	height mt		1	5,0	2,0				16		
			2	6,0	5,0				14		
			3	13,0	6,0				23		
			4								
			5								
				GLOBAL DEFORMATION MODULUS EG							
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)	
Ei = (1+ v) Φ Pax - Pmin		Ey= (EII+EIII)/2			10,0	2,0				21	
dmax - dmin		Ey= EIII		DIAMETER		F	F	F	F		
DEFORMATION MODULUS Ti Ti = (1+ v) Φ Pi - Pi-1 Xi - Xi-1			beginning diameter (mm)							102,128	
			final diameter (mm)							109,768	
			range mm							7,641	
			DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS					
			Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	959	EG (MPa)	21
GLOBAL DEFORMATION MODULUS EG			bar	0	120	240	0	Pf creep pressure (KPa)	1424	E (MPa)	55
EG = (1+ v) Φ Pmax - Po			5,0	10,997	10,997	10,997	15,130	PL limit pres. (KPa) Cassan >	1780	E/PL	24,45
dmax - do			6,0	11,342	11,342	11,342	16,074	PL' net limit pres (KPa) >	864	EG/Ey	0,39
			13,0	11,692	11,692	11,692	20,319	Ko lateral coeff at rest (KPa)	0,70	cu coesion (KPa) johnson>	203
								Pho lateral pressure (KPa)	916	φ friction angle (°) >	

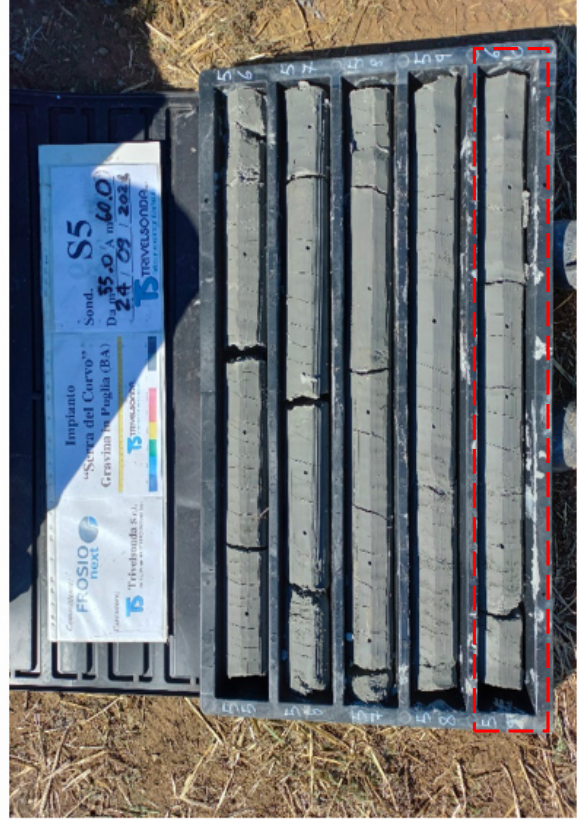
borehole	S5	probe depth m	59,5	code	2
Client:	FROSIO NEXT	job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	27.09.21
			NORTH	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

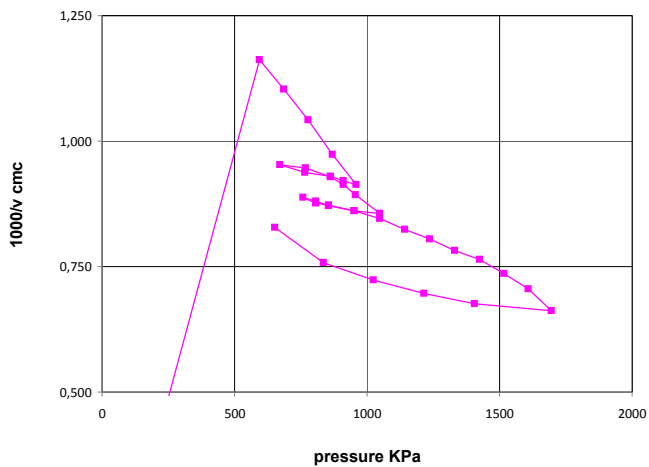
PLACE



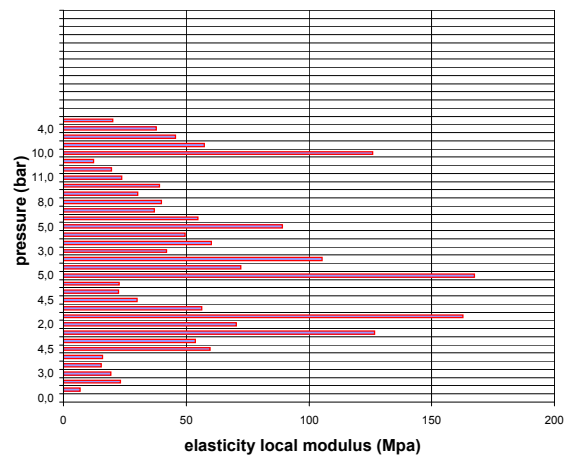
SECTION



pressure - 1/V



elasticity local modulus - pressure



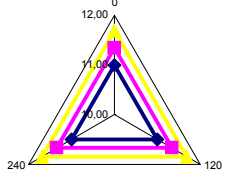
note

	borehole	S5	probe depth m	69,5	code	3	mod DVT REV3, 20 settembre 2020	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140	
	Project	IMPIANTO SERRA DEL CORLO		report	2140	DRT		
	site	GRAVINA DI PUGLIA	coordinates	EAST	date	27.09.21	pag	1/3
				NORTH				

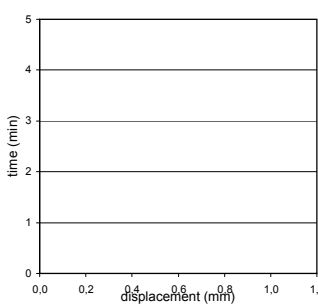
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole		S5	
test	3	depth	69,5
slope (degree)	90	core barrell	C.SEMPLICE 101MM
Device: GEOANALISI VM02			
Orientation capteur		Standard method: ISRM 1987	
C1=		Borehole diam	VEDI DIAM
Probe diam	95		
Meteo		Temperatu re	
lithotype LIMO ARGILLOSO			
water table		30,0	
		POCKET PENETRO METER	
Temps mir	PBAR	MM	
PROBE SCHEME			
			
rod adaptor			
electronic device			
double action piston			
expandable cylinder			
PROBE CALIBRATION			
probe			
membrane		CAUCCIU' ARMATO	
measure cell height (cm)		47,50	
V0 cell volume at rest (cmc)		2984	
lenght cable (mt)		100	
Volume initial Vi (cmc)		312	
diam calibration tube (cm)		9,4	
tube calibration volume cmc		3296	
Calibration in air			
coeff m		0,11 Kpa/cmc	
Confined calibration			
first load		4,2 cmc/Mpa	
unload		3,6 cmc/Mpa	

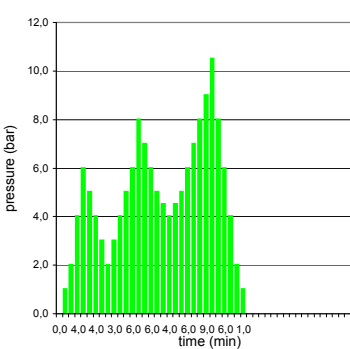
direction - displacement



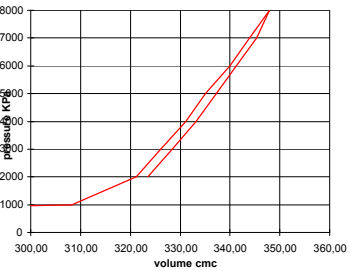
creep diagram



pressure - time



calibration

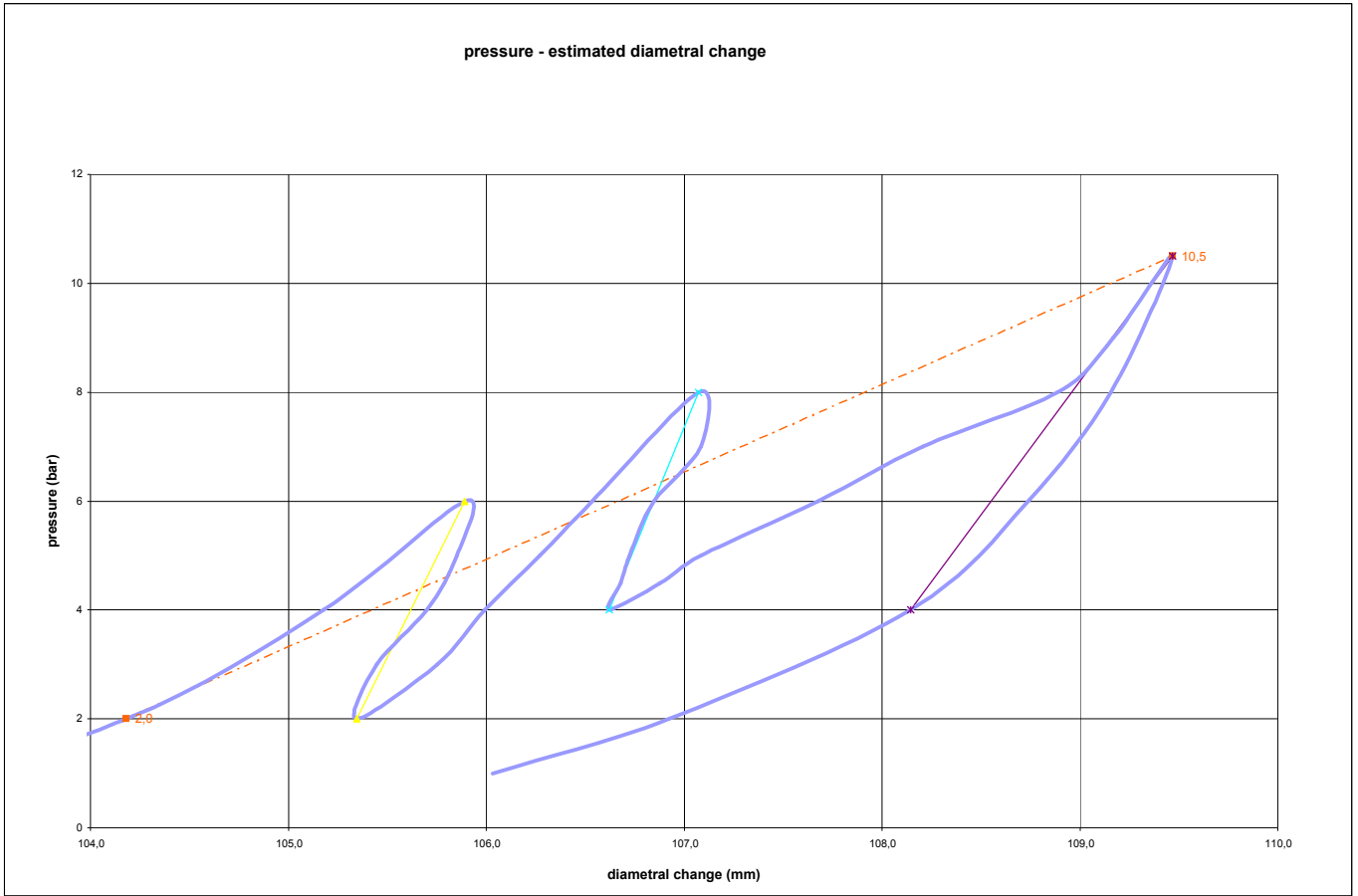


PRESSURE	P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo
STEP	bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa
0	0,0	0	0,0	-14,141	0,000	89,449	0,000	0,0
1	1,0	681	975,0	-1,105	1,026	103,030	13,580	7,0
2	2,0	769	1064,0	0,000	0,940	104,181	14,732	11,5
3	4,0	956	1142,0	0,958	0,876	105,180	15,730	28,4
4	6,0	1145	1197,9	1,641	0,835	105,891	16,441	40,8
5	5,0	1048	1194,9	1,605	0,837	105,853	16,404	396,1
6	4,0	951	1183,0	1,459	0,845	105,701	16,252	97,5
7	3,0	855	1163,0	1,215	0,860	105,447	15,998	57,7
8	2,0	758	1155,0	1,118	0,866	105,346	15,896	146,0
9	3,0	853	1187,0	1,508	0,842	105,752	16,303	35,5
10	4,0	948	1206,0	1,738	0,829	105,992	16,543	61,2
11	5,0	1044	1227,9	2,005	0,814	106,270	16,821	52,9
12	6,0	1139	1248,9	2,259	0,801	106,534	17,085	55,8
13	8,0	1331	1291,9	2,777	0,774	107,074	17,625	54,8
14	7,0	1232	1292,9	2,789	0,773	107,087	17,637	-1203,5
15	6,0	1137	1273,9	2,560	0,785	106,849	17,399	62,4
16	5,0	1040	1263,9	2,440	0,791	106,723	17,274	119,6
17	4,5	991	1260,5	2,398	0,793	106,679	17,230	171,2
18	4,0	943	1256,0	2,344	0,796	106,623	17,173	132,7
19	4,5	989	1276,5	2,591	0,783	106,880	17,431	28,1
20	5,0	1036	1292,9	2,789	0,773	107,087	17,637	35,4
21	6,0	1129	1339,9	3,352	0,746	107,673	18,224	24,6
22	7,0	1222	1382,9	3,865	0,723	108,207	18,758	27,3
23	8,0	1314	1437,9	4,516	0,695	108,886	19,437	21,2
24	9,0	1409	1460,9	4,788	0,685	109,169	19,720	53,3
25	10,5	1553	1485,4	5,076	0,673	109,469	20,020	76,1
26	8,0	1311	1459,9	4,776	0,685	109,157	19,708	122,8
27	6,0	1119	1425,9	4,375	0,701	108,739	19,289	72,6
28	4,0	929	1378,0	3,805	0,726	108,146	18,696	50,5
29	2,0	744	1280,0	2,633	0,781	106,924	17,475	23,6
30	1,0	654	1209,0	1,775	0,827	106,031	16,581	15,5

I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione

FIELD LIMITS								
	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop
min	2,0	768,8	1064,0	0,0	0,9	104,2	14,7	primo
	max	10,5	1553,3	1485,4	5,1	0,7	109,5	20,0
max	6,0	1145,3	1197,9	1,6	0,8	105,9	16,4	I
	min	2,0	758,3	1155,0	1,1	0,9	105,3	15,9
max	8,0	1330,5	1291,9	2,8	0,8	107,1	17,6	II
	min	4,0	942,7	1256,0	2,3	0,8	106,6	17,2
max	10,5	1553,3	1485,4	5,1	0,7	109,5	20,0	III
	min	4,0	928,7	1378,0	3,8	0,7	108,1	18,7

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DATA PROCESSING						SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE		
Legend: H = test depth W = water table depth v = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro	DATA			ELASTICITY MODULUS Ei							
				loop	Pmax	Pmin	E sensor 1 (Mpa)	E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)	
	symbol	datum	1	6,0	2,0				107		
	ynsoil	2,2	2	8,0	4,0				130		
	W (ml)	69,5	3	10,5	4,0				71		
	v	0,45	4								
	vo (cmc)	2984	5								
	do (mm)	89,45	DEFORMATION MODULUS Ti								
	σv (kPa)	1529	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)		
	height mt		1	6,0	2,0				33		
		2	8,0	6,0				24			
		3	10,5	8,0				14			
		4									
		5									
				GLOBAL DEFORMATION MODULUS EG							
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)	
Ei = (1+ v) Φ Pax - Pmin		Ey= (EII+EIII)/2			10,5	2,0				22	
dmax - dmin		Ey= EIII		DIAMETER			F	F	F	F	
DEFORMATION MODULUS Ti Ti = (1+ v) Φ Pi - Pi-1 Xi - Xi-1				beginning diameter (mm)						104,181	
				final diameter (mm)						109,469	
				range mm						5,288	
DM loop minimun displacement				DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS							
Pbar		C1	C2	C3	Cm	Po initial pressure (KPa)	1048	EG (MPa)		22	
GLOBAL DEFORMATION MODULUS EG		bar	0	120	240	0	Pf creep pressure (KPa)	1553	E (MPa)		71
EG = (1+ v) Φ Pmax - Po		6,0	10,997	10,997	10,997	16,441	PL limit pres. (KPa) Cassan >	1891	E/PL		27,29
dmax - do		8,0	11,342	11,342	11,342	17,625	PL' net limit pres (KPa) >	821	EG/Ey		0,31
		10,5	11,692	11,692	11,692	20,020	Ko lateral coeff at rest (KPa)	0,70	cu coesion (KPa) johnson>		214
							Pho lateral pressure (KPa)	1070	φ friction angle (°) >		

borehole	S5	probe depth m	69,5	code	3
Client:	FROSIO NEXT	job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORLO	report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	27.09.21
			NORTH	pag	3/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

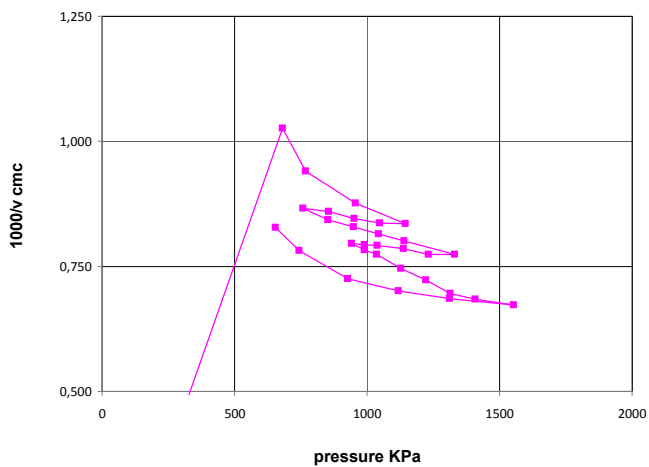
PLACE



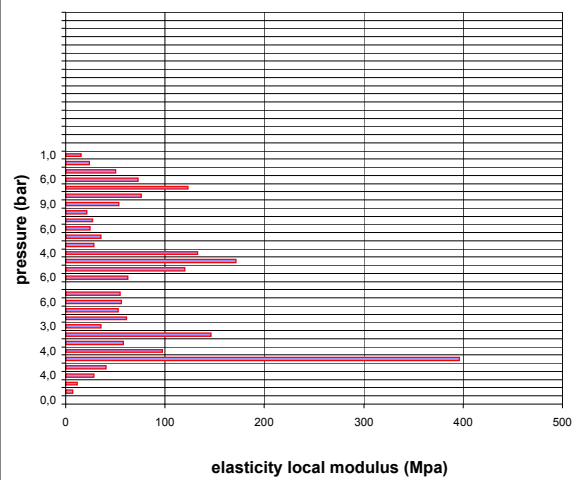
SECTION



pressure - 1/V



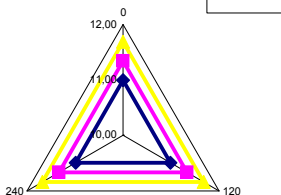
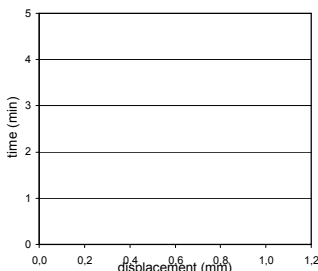
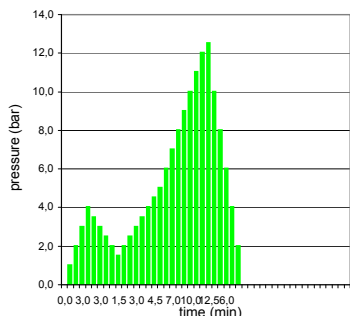
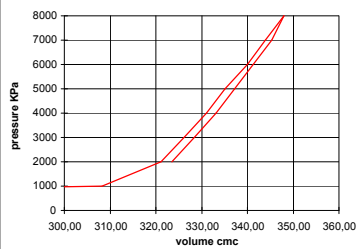
elasticity local modulus - pressure



note

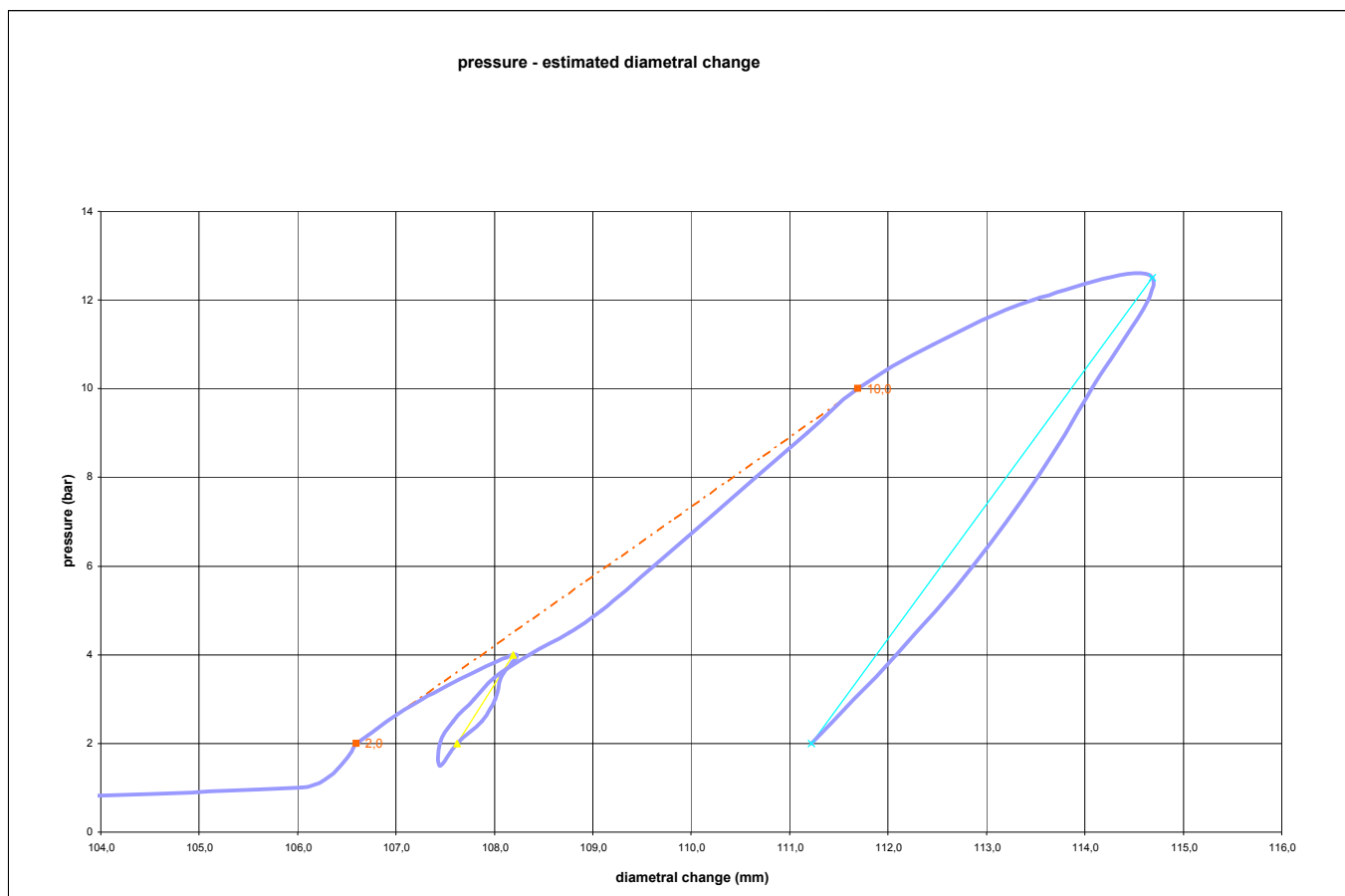
	borehole	S9	probe depth m	61,0	code	1	mod DVT REV3. 20 settembre 2020	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140	
	Project	IMPIANTO SERRA DEL CORVO		report	2140	DRT		
	site	GRAVINA DI PUGLIA	coordinates	EAST	date	05.10.21	pag	1/3
				NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole S9				direction - displacement 		<table><tr><th>PRESSURE</th><th>P</th><th>Pcorr</th><th>Vol</th><th>e c</th><th>1/V</th><th>diameter</th><th>Dil. Diam</th><th>Modulo</th></tr><tr><th>STEP</th><th>bar</th><th>Kpa</th><th>cmc</th><th>%</th><th>1000/cmc</th><th>(mm)</th><th>(mm)</th><th>MPa</th></tr><tr><td>0</td><td>0,0</td><td>0</td><td>0,0</td><td>-16,085</td><td>0,000</td><td>89,449</td><td>0,000</td><td>0,0</td></tr><tr><td>1</td><td>1,0</td><td>569</td><td>1209,9</td><td>-0,519</td><td>0,827</td><td>106,042</td><td>16,593</td><td>4,9</td></tr><tr><td>2</td><td>2,0</td><td>662</td><td>1253,8</td><td>0,000</td><td>0,798</td><td>106,595</td><td>17,146</td><td>25,9</td></tr><tr><td>3</td><td>3,0</td><td>754</td><td>1307,7</td><td>0,634</td><td>0,765</td><td>107,271</td><td>17,822</td><td>21,1</td></tr><tr><td>4</td><td>4,0</td><td>844</td><td>1381,6</td><td>1,496</td><td>0,724</td><td>108,190</td><td>18,741</td><td>15,2</td></tr><tr><td>5</td><td>3,5</td><td>796</td><td>1371,6</td><td>1,381</td><td>0,729</td><td>108,067</td><td>18,618</td><td>60,9</td></tr><tr><td>6</td><td>3,0</td><td>747</td><td>1366,7</td><td>1,323</td><td>0,732</td><td>108,006</td><td>18,556</td><td>123,8</td></tr><tr><td>7</td><td>2,5</td><td>700</td><td>1355,7</td><td>1,196</td><td>0,738</td><td>107,870</td><td>18,420</td><td>55,0</td></tr><tr><td>8</td><td>2,0</td><td>653</td><td>1335,8</td><td>0,963</td><td>0,749</td><td>107,622</td><td>18,172</td><td>29,4</td></tr><tr><td>9</td><td>1,5</td><td>605</td><td>1321,8</td><td>0,800</td><td>0,757</td><td>107,448</td><td>17,998</td><td>42,6</td></tr><tr><td>10</td><td>2,0</td><td>654</td><td>1321,8</td><td>0,799</td><td>0,757</td><td>107,447</td><td>17,998</td><td>-10938,1</td></tr><tr><td>11</td><td>2,5</td><td>702</td><td>1332,7</td><td>0,927</td><td>0,750</td><td>107,584</td><td>18,134</td><td>54,6</td></tr><tr><td>12</td><td>3,0</td><td>749</td><td>1349,7</td><td>1,125</td><td>0,741</td><td>107,794</td><td>18,345</td><td>34,9</td></tr><tr><td>13</td><td>3,5</td><td>796</td><td>1366,6</td><td>1,322</td><td>0,732</td><td>108,005</td><td>18,556</td><td>35,0</td></tr><tr><td>14</td><td>4,0</td><td>842</td><td>1394,6</td><td>1,647</td><td>0,717</td><td>108,351</td><td>18,902</td><td>20,8</td></tr><tr><td>15</td><td>4,5</td><td>887</td><td>1427,5</td><td>2,029</td><td>0,701</td><td>108,758</td><td>19,309</td><td>17,5</td></tr><tr><td>16</td><td>5,0</td><td>933</td><td>1454,4</td><td>2,340</td><td>0,688</td><td>109,090</td><td>19,640</td><td>21,9</td></tr><tr><td>17</td><td>6,0</td><td>1027</td><td>1497,3</td><td>2,833</td><td>0,668</td><td>109,615</td><td>20,166</td><td>28,1</td></tr><tr><td>18</td><td>7,0</td><td>1120</td><td>1540,2</td><td>3,324</td><td>0,649</td><td>110,139</td><td>20,689</td><td>28,4</td></tr><tr><td>19</td><td>8,0</td><td>1213</td><td>1583,1</td><td>3,813</td><td>0,632</td><td>110,659</td><td>21,210</td><td>28,6</td></tr><tr><td>20</td><td>9,0</td><td>1306</td><td>1626,0</td><td>4,299</td><td>0,615</td><td>111,178</td><td>21,728</td><td>28,9</td></tr><tr><td>21</td><td>10,0</td><td>1399</td><td>1668,9</td><td>4,783</td><td>0,599</td><td>111,694</td><td>22,244</td><td>29,2</td></tr><tr><td>22</td><td>11,0</td><td>1490</td><td>1732,8</td><td>5,500</td><td>0,577</td><td>112,458</td><td>23,008</td><td>19,3</td></tr><tr><td>23</td><td>12,0</td><td>1578</td><td>1818,7</td><td>6,456</td><td>0,550</td><td>113,477</td><td>24,028</td><td>14,2</td></tr><tr><td>24</td><td>12,5</td><td>1615</td><td>1921,6</td><td>7,591</td><td>0,520</td><td>114,687</td><td>25,237</td><td>5,1</td></tr><tr><td>25</td><td>10,0</td><td>1376</td><td>1868,9</td><td>7,011</td><td>0,535</td><td>114,069</td><td>24,619</td><td>64,2</td></tr><tr><td>26</td><td>8,0</td><td>1185</td><td>1822,1</td><td>6,494</td><td>0,549</td><td>113,518</td><td>24,068</td><td>57,1</td></tr><tr><td>27</td><td>6,0</td><td>996</td><td>1766,3</td><td>5,874</td><td>0,566</td><td>112,857</td><td>23,408</td><td>47,1</td></tr><tr><td>28</td><td>4,0</td><td>807</td><td>1701,6</td><td>5,150</td><td>0,588</td><td>112,085</td><td>22,636</td><td>39,9</td></tr><tr><td>29</td><td>2,0</td><td>619</td><td>1629,8</td><td>4,342</td><td>0,614</td><td>111,223</td><td>21,774</td><td>35,3</td></tr></table>									PRESSURE	P	Pcorr	Vol	e c	1/V	diameter	Dil. Diam	Modulo	STEP	bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa	0	0,0	0	0,0	-16,085	0,000	89,449	0,000	0,0	1	1,0	569	1209,9	-0,519	0,827	106,042	16,593	4,9	2	2,0	662	1253,8	0,000	0,798	106,595	17,146	25,9	3	3,0	754	1307,7	0,634	0,765	107,271	17,822	21,1	4	4,0	844	1381,6	1,496	0,724	108,190	18,741	15,2	5	3,5	796	1371,6	1,381	0,729	108,067	18,618	60,9	6	3,0	747	1366,7	1,323	0,732	108,006	18,556	123,8	7	2,5	700	1355,7	1,196	0,738	107,870	18,420	55,0	8	2,0	653	1335,8	0,963	0,749	107,622	18,172	29,4	9	1,5	605	1321,8	0,800	0,757	107,448	17,998	42,6	10	2,0	654	1321,8	0,799	0,757	107,447	17,998	-10938,1	11	2,5	702	1332,7	0,927	0,750	107,584	18,134	54,6	12	3,0	749	1349,7	1,125	0,741	107,794	18,345	34,9	13	3,5	796	1366,6	1,322	0,732	108,005	18,556	35,0	14	4,0	842	1394,6	1,647	0,717	108,351	18,902	20,8	15	4,5	887	1427,5	2,029	0,701	108,758	19,309	17,5	16	5,0	933	1454,4	2,340	0,688	109,090	19,640	21,9	17	6,0	1027	1497,3	2,833	0,668	109,615	20,166	28,1	18	7,0	1120	1540,2	3,324	0,649	110,139	20,689	28,4	19	8,0	1213	1583,1	3,813	0,632	110,659	21,210	28,6	20	9,0	1306	1626,0	4,299	0,615	111,178	21,728	28,9	21	10,0	1399	1668,9	4,783	0,599	111,694	22,244	29,2	22	11,0	1490	1732,8	5,500	0,577	112,458	23,008	19,3	23	12,0	1578	1818,7	6,456	0,550	113,477	24,028	14,2	24	12,5	1615	1921,6	7,591	0,520	114,687	25,237	5,1	25	10,0	1376	1868,9	7,011	0,535	114,069	24,619	64,2	26	8,0	1185	1822,1	6,494	0,549	113,518	24,068	57,1	27	6,0	996	1766,3	5,874	0,566	112,857	23,408	47,1	28	4,0	807	1701,6	5,150	0,588	112,085	22,636	39,9	29	2,0	619	1629,8	4,342	0,614	111,223	21,774	35,3
PRESSURE	P	Pcorr	Vol			e c	1/V	diameter	Dil. Diam	Modulo																																																																																																																																																																																																																																																																																																				
STEP	bar	Kpa	cmc	%	1000/cmc	(mm)	(mm)	MPa																																																																																																																																																																																																																																																																																																						
0	0,0	0	0,0	-16,085	0,000	89,449	0,000	0,0																																																																																																																																																																																																																																																																																																						
1	1,0	569	1209,9	-0,519	0,827	106,042	16,593	4,9																																																																																																																																																																																																																																																																																																						
2	2,0	662	1253,8	0,000	0,798	106,595	17,146	25,9																																																																																																																																																																																																																																																																																																						
3	3,0	754	1307,7	0,634	0,765	107,271	17,822	21,1																																																																																																																																																																																																																																																																																																						
4	4,0	844	1381,6	1,496	0,724	108,190	18,741	15,2																																																																																																																																																																																																																																																																																																						
5	3,5	796	1371,6	1,381	0,729	108,067	18,618	60,9																																																																																																																																																																																																																																																																																																						
6	3,0	747	1366,7	1,323	0,732	108,006	18,556	123,8																																																																																																																																																																																																																																																																																																						
7	2,5	700	1355,7	1,196	0,738	107,870	18,420	55,0																																																																																																																																																																																																																																																																																																						
8	2,0	653	1335,8	0,963	0,749	107,622	18,172	29,4																																																																																																																																																																																																																																																																																																						
9	1,5	605	1321,8	0,800	0,757	107,448	17,998	42,6																																																																																																																																																																																																																																																																																																						
10	2,0	654	1321,8	0,799	0,757	107,447	17,998	-10938,1																																																																																																																																																																																																																																																																																																						
11	2,5	702	1332,7	0,927	0,750	107,584	18,134	54,6																																																																																																																																																																																																																																																																																																						
12	3,0	749	1349,7	1,125	0,741	107,794	18,345	34,9																																																																																																																																																																																																																																																																																																						
13	3,5	796	1366,6	1,322	0,732	108,005	18,556	35,0																																																																																																																																																																																																																																																																																																						
14	4,0	842	1394,6	1,647	0,717	108,351	18,902	20,8																																																																																																																																																																																																																																																																																																						
15	4,5	887	1427,5	2,029	0,701	108,758	19,309	17,5																																																																																																																																																																																																																																																																																																						
16	5,0	933	1454,4	2,340	0,688	109,090	19,640	21,9																																																																																																																																																																																																																																																																																																						
17	6,0	1027	1497,3	2,833	0,668	109,615	20,166	28,1																																																																																																																																																																																																																																																																																																						
18	7,0	1120	1540,2	3,324	0,649	110,139	20,689	28,4																																																																																																																																																																																																																																																																																																						
19	8,0	1213	1583,1	3,813	0,632	110,659	21,210	28,6																																																																																																																																																																																																																																																																																																						
20	9,0	1306	1626,0	4,299	0,615	111,178	21,728	28,9																																																																																																																																																																																																																																																																																																						
21	10,0	1399	1668,9	4,783	0,599	111,694	22,244	29,2																																																																																																																																																																																																																																																																																																						
22	11,0	1490	1732,8	5,500	0,577	112,458	23,008	19,3																																																																																																																																																																																																																																																																																																						
23	12,0	1578	1818,7	6,456	0,550	113,477	24,028	14,2																																																																																																																																																																																																																																																																																																						
24	12,5	1615	1921,6	7,591	0,520	114,687	25,237	5,1																																																																																																																																																																																																																																																																																																						
25	10,0	1376	1868,9	7,011	0,535	114,069	24,619	64,2																																																																																																																																																																																																																																																																																																						
26	8,0	1185	1822,1	6,494	0,549	113,518	24,068	57,1																																																																																																																																																																																																																																																																																																						
27	6,0	996	1766,3	5,874	0,566	112,857	23,408	47,1																																																																																																																																																																																																																																																																																																						
28	4,0	807	1701,6	5,150	0,588	112,085	22,636	39,9																																																																																																																																																																																																																																																																																																						
29	2,0	619	1629,8	4,342	0,614	111,223	21,774	35,3																																																																																																																																																																																																																																																																																																						
test 1 depth 61,0 slope (degree) 90 core barrell C.SEMPLICE 101MM Device: GEOANALISI VM02 Orientation capteur C1= Standard method: ISRM 1987 Probe diam 95 Borehole diam VEDI DIAM Meteo Temperatu re lithotype water table 51,0 POCKET PENETRO METER Temps mir PBAR MM				creep diagram 																																																																																																																																																																																																																																																																																																										
PROBE SCHEME 				pressure - time 																																																																																																																																																																																																																																																																																																										
PROBE CALIBRATION probe membrane CAUCCIU' ARMATO measure cell height (cm) 47,50 V0 cell volume at rest (cmc) 2984 length cable (mt) 100 Volume initial Vi (cmc) 312 diam calibration tube (cm) 9,4 tube calibration volume cmc 3296 Calibration in air coeff m 0,11 Kpa/cmc Confined calibration first load 4,2 cmc/Mpa unload 3,6 cmc/Mpa				calibration 		I valori diametrali sono calcolati come valore medio della sonda cilindrica in espansione <table><tr><th>FIELD LIMITS</th><th>P</th><th>P corr</th><th>V corr</th><th>creep</th><th>1000/V</th><th>diameter</th><th>Dil. Diam</th><th>loop</th></tr><tr><td>min</td><td>2,0</td><td>662,2</td><td>1253,8</td><td>0,0</td><td>0,8</td><td>106,6</td><td>17,1</td><td>primo carico</td></tr><tr><td>max</td><td>10,0</td><td>1399,2</td><td>1668,9</td><td>4,8</td><td>0,6</td><td>111,7</td><td>22,2</td><td></td></tr><tr><td>max</td><td>4,0</td><td>843,7</td><td>1381,6</td><td>1,5</td><td>0,7</td><td>108,2</td><td>18,7</td><td>I</td></tr><tr><td>min</td><td>2,0</td><td>652,8</td><td>1335,8</td><td>1,0</td><td>0,7</td><td>107,6</td><td>18,2</td><td></td></tr><tr><td>max</td><td>12,5</td><td>1615,4</td><td>1921,6</td><td>7,6</td><td>0,5</td><td>114,7</td><td>25,2</td><td>II</td></tr><tr><td>min</td><td>2,0</td><td>619,0</td><td>1629,8</td><td>4,3</td><td>0,6</td><td>111,2</td><td>21,8</td><td></td></tr><tr><td>max</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>III</td></tr><tr><td>min</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>									FIELD LIMITS	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop	min	2,0	662,2	1253,8	0,0	0,8	106,6	17,1	primo carico	max	10,0	1399,2	1668,9	4,8	0,6	111,7	22,2		max	4,0	843,7	1381,6	1,5	0,7	108,2	18,7	I	min	2,0	652,8	1335,8	1,0	0,7	107,6	18,2		max	12,5	1615,4	1921,6	7,6	0,5	114,7	25,2	II	min	2,0	619,0	1629,8	4,3	0,6	111,2	21,8		max								III	min																																																																																																																																																																																																																							
FIELD LIMITS	P	P corr	V corr	creep	1000/V	diameter	Dil. Diam	loop																																																																																																																																																																																																																																																																																																						
min	2,0	662,2	1253,8	0,0	0,8	106,6	17,1	primo carico																																																																																																																																																																																																																																																																																																						
max	10,0	1399,2	1668,9	4,8	0,6	111,7	22,2																																																																																																																																																																																																																																																																																																							
max	4,0	843,7	1381,6	1,5	0,7	108,2	18,7	I																																																																																																																																																																																																																																																																																																						
min	2,0	652,8	1335,8	1,0	0,7	107,6	18,2																																																																																																																																																																																																																																																																																																							
max	12,5	1615,4	1921,6	7,6	0,5	114,7	25,2	II																																																																																																																																																																																																																																																																																																						
min	2,0	619,0	1629,8	4,3	0,6	111,2	21,8																																																																																																																																																																																																																																																																																																							
max								III																																																																																																																																																																																																																																																																																																						
min																																																																																																																																																																																																																																																																																																														

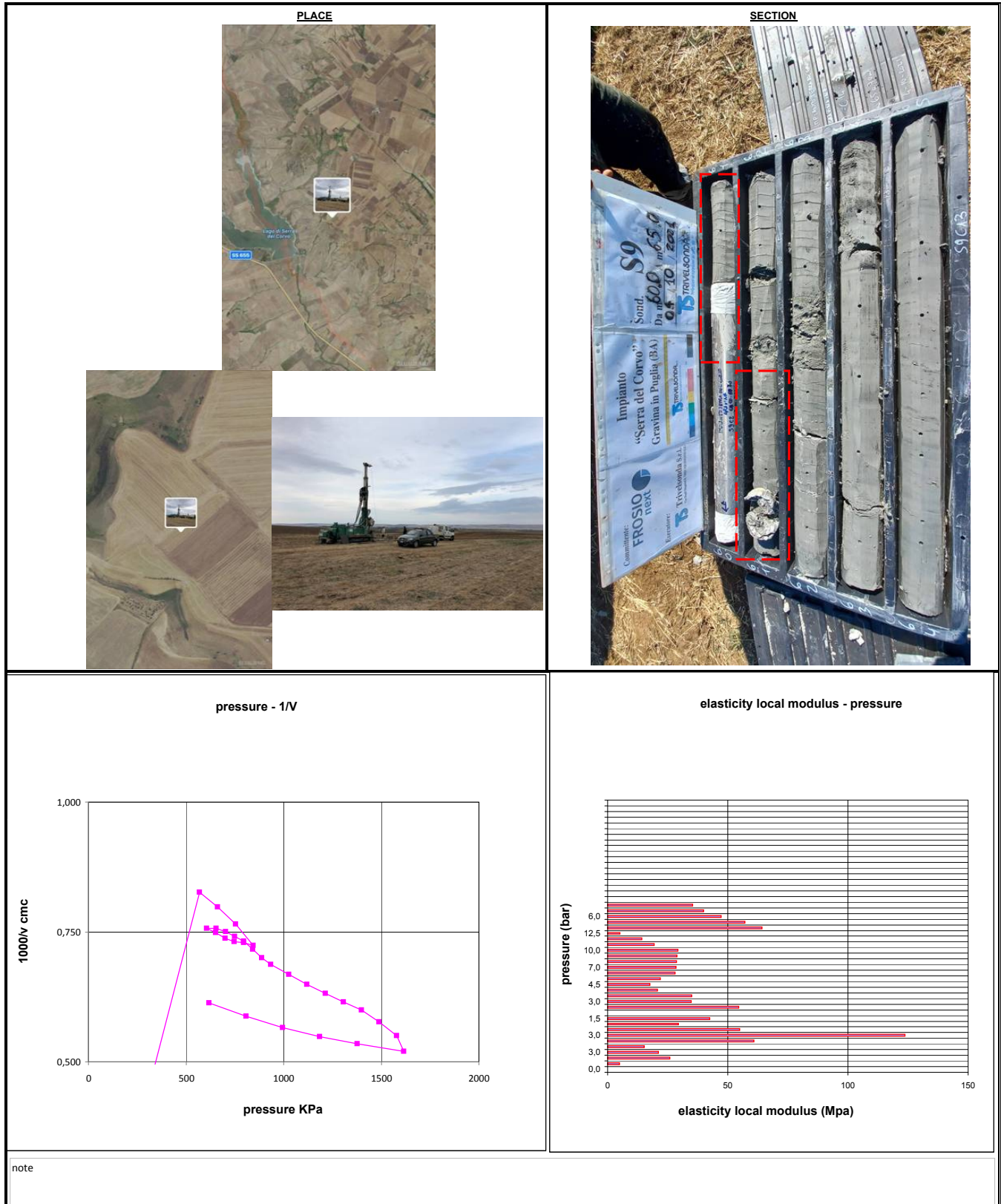
	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S9	probe depth m	61,0	code	1	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORVO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST NORTH	date	05.10.21	pag	2/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DATA PROCESSING							SENSOR 1	SENSOR 2	SENSOR 3	SENSOR AVE			
Legend: H = test depth W = water table depth ν = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro				DATA	ELASTICITY MODULUS Ei								
					loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)	E sensor 3 (Mpa)	E1-E2-E3 average(Mpa)	
				symbol	datum	1	4,0	2,0					52
				γnsoil	2,1	2	12,5	2,0					44
				W (ml)	61,0	3							
				v	0,45	4							
				vo (cmc)	2984	5							
				do (mm)	89,45	DEFORMATION MODULUS Ti							
				σv (kPa)	1281	loop	Pmax	Pmin	T1 (Mpa)	T2 (Mpa)	T3 (Mpa)	Tm (Mpa)	
				height mt		1	4,0	2,0					18
						2	12,5	4,0					18
						3							
						4							
						5							
				GLOBAL DEFORMATION MODULUS EG									
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)	EG2 (Mpa)	EG3 (Mpa)	EGm (Mpa)			
Ei = (1+ ν) Φ Pax - Pmin		Ey= (EII+EIII)/2			10,0	2,0					22		
dmax - dmin		Ey= EIII		DIAMETER			F	F	F	F			
DEFORMATION MODULUS Ti Ti = (1+ ν) Φ Pi - Pi-1 Xi - Xi-1				begining diameter (mm)							106,595		
				final diameter (mm)								114,687	
				range mm								8,091	
				DM loop minimun displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS						
				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)	796	EG (MPa)	22	
GLOBAL DEFORMATION MODULUS EG				bar	0	120	240	0	Pf creep pressure (KPa)	1399	E (MPa)	44	
EG = (1+ ν) Φ Pmax - Po				4,0	10,997	10,997	10,997	18,741	PL limit pres. (KPa) Cassan >	1751	E/P/L	26,15	
dmax - do				12,5	11,342	11,342	11,342	25,237	PL' net limit pres (KPa) >	854	EG/Ey	0,50	
				0,0	11,692	11,692	11,692	0,000	Ko lateral coeff at rest (KPa)	0,70	cu coesion (KPa) johnson>		200
									Pho lateral pressure (KPa)	897	φ friction angle (°) >		

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



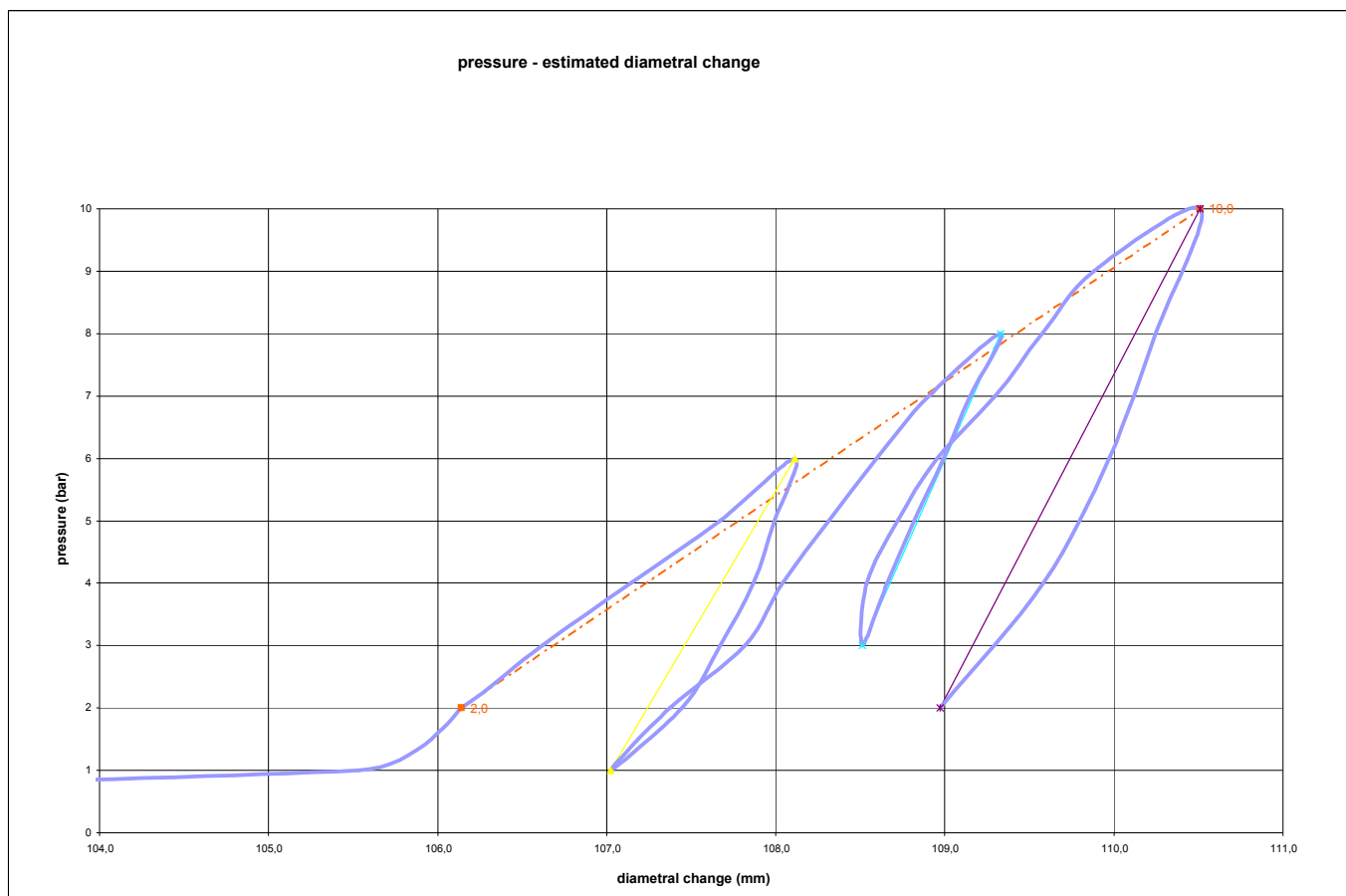
	borehole	S9	probe depth m	71,0	mod DVT REV3. 20 settembre 2020		
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORVO		report	2140	DRT	
	site	GRAVINA DI PUGLIA	coordinates	EAST	date	05.10.21	pag
				NORTH			1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole				S9			
test		2		depth		71,0	
slope (degree)		90		core barrel		C.SEMPLICE 101MM	
Device: GEOANALISI VM02							
Orientation capteur		C1=		Standard method: ISRM 1987			
Probe diam		95		Borehole diam VEDI DIAM			
Meteo				Temperatu re			
lithotype ARGILLA SABBIOSA							
water table		51,0		POCKET PENETRO METER			
Temps mir		PBAR		MM			

	DILATOMETRIC ROCK TEST DRT				mod DVT REV3. 20 settembre 2020		
	borehole	S9	probe depth m	71,0	code	2	
	Client:	FROSIO NEXT		job	2140	v. accept.	2140
	Project	IMPIANTO SERRA DEL CORVO		report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	05.10.21	pag	2/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE		
Legend: H = test depth W = water table depth v = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro	DATA			ELASTICITY MODULUS Ei											
				loop	Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)		
	symbol	datum	1	6,0	1,0							68			
	γsoil	2,2	2	8,0	3,0					91					
	W (ml)	71,0	3	10,0	2,0					77					
	v	0,45	4												
	vo (cmc)	2984	5												
	do (mm)	89,45	DEFORMATION MODULUS Ti												
	σv (kPa)	1562	loop	Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)			
	height mt		1	6,0	2,0							29			
		2	8,0	6,0							23				
		3	10,0	8,0							24				
		4													
		5													
				GLOBAL DEFORMATION MODULUS EG											
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated			Pmax	Pmin	EG1 (Mpa)		EG2 (Mpa)		EG3 (Mpa)		EGm (Mpa)		
Ei = (1+ v) Φ Pax - Pmin		Ey= (EII+EIII)/2			10,0	2,0							26		
dmax - dmin		Ey= EIII		DIAMETER			F		F		F		F		
				begining diameter (mm)									106,142		
				final diameter (mm)									110,511		
				range mm									4,370		
DEFORMATION MODULUS Ti				DM loop mininum displacement			DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS								
Ti = (1+ v) Φ Pi - Pi-1				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		1047	EG (MPa)		26	
Xi - Xi-1				bar	0	120	240	0	Pf creep pressure (KPa)		1510	E (MPa)		77	
GLOBAL DEFORMATION MODULUS EG				6,0	10,997	10,997	10,997	18,664	PL limit pres. (KPa) Cassan >		1802	E/P/L		36,97	
EG = (1+ v) Φ Pmax - Po				8,0	11,342	11,342	11,342	19,882	PL' net limit pres (KPa) >		709	EG/Ey		0,34	
dmax - do				10,0	11,692	11,692	11,692	21,062	Ko lateral coeff at rest (KPa)		0,70	cu coesion (KPa) johnson>		205	
									Pho lateral pressure (KPa)		1093	φ friction angle (°) >			

DILATOMETRIC ROCK TEST DRT					mod DVT REV3, 20 settembre 2020	
borehole	S9	probe depth m	71,0	code	2	
Client:	FROSIO NEXT	job	2140	v. accept.	2140	
Project	IMPIANTO SERRA DEL CORVO	report	2140	DRT		
site	GRAVINA DI PUGLIA	coordinates	EAST	date	05.10.21	pag 3/3
			NORTH			

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

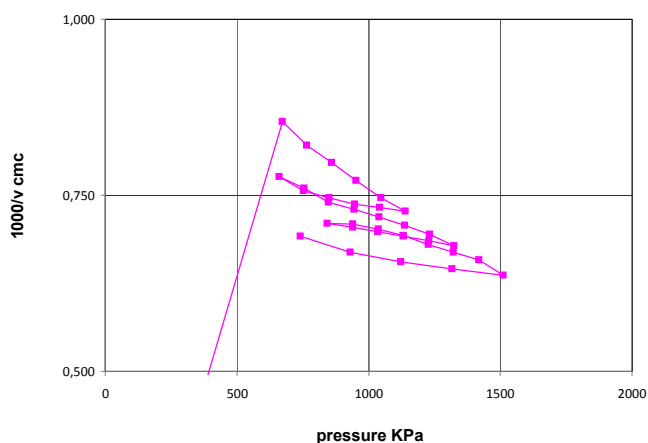
PLACE



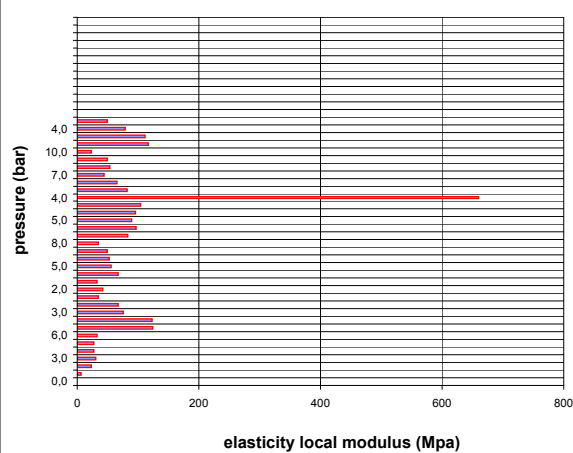
SECTION



pressure - 1/V



elasticity local modulus - pressure



note

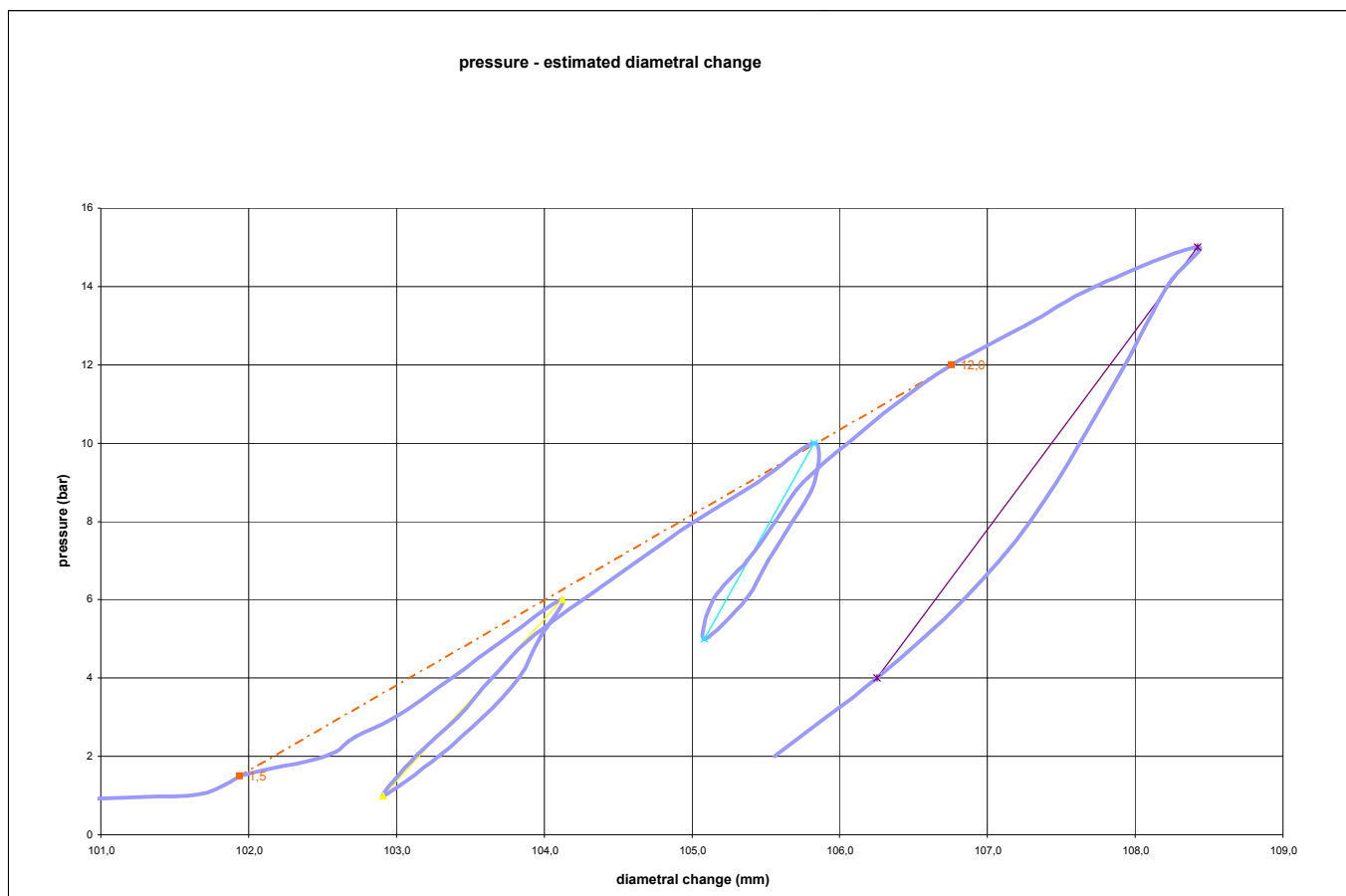
	borehole	S9	probe depth m	78,0	mod DVT REV3. 20 settembre 2020				
	Client:	FROSIO NEXT	job	2140	v. accept.	2140	code	3	
	Project	IMPIANTO SERRA DEL CORVO	report	2140	DRT				
	site	GRAVINA DI PUGLIA	coordinates	EAST	NORTH	date	05.10.21	pag	1/3

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987

Borehole S9		direction - displacement											
test 3	depth 78,0												
slope (degree)	core barrell												
90	C.SEMPLICE 101MM												
Device:													
GEOANALISI VM02													
Orientation capteur		Standard method:											
C1=		ISRM 1987											
Probe diam	95	Borehole diam	VEDI DIAM										
Meteo		Temperatu	re										
lithotype													
water table	51,0	POCKET PENETRO METER											
Temps mir	PBAR	MM											
PROBE SCHEME													
		rod adaptor											
		electronic device											
		double action piston											
		expandable cylinder											
PROBE CALIBRATION													
probe													
membrane		CAUCCIU' ARMATO											
measure cell height (cm)		47,50											
V0 cell volume at rest (cmc)		2984											
lenght cable (mt)		100											
Volume initial Vi (cmc)		312											
diam calibration tube (cm)		9,4											
tube calibration volume cmc		3296											
Calibration in air													
coeff m		0,11 Kpa/cmc											
Confined calibration													
first load		4,2 cmc/Mpa											
unload		3,6 cmc/Mpa											

DILATOMETRIC ROCK TEST DRT		mod DVT REV3. 20 settembre 2020	
borehole	S9	probe depth m	78,0
code	3		
Client:	FROSIO NEXT	job	2140 v. accept. 2140
Project	IMPIANTO SERRA DEL CORVO	report	2140 DRT
site	GRAVINA DI PUGLIA	coordinates	EAST NORTH
date	05.10.21	pag	2/3

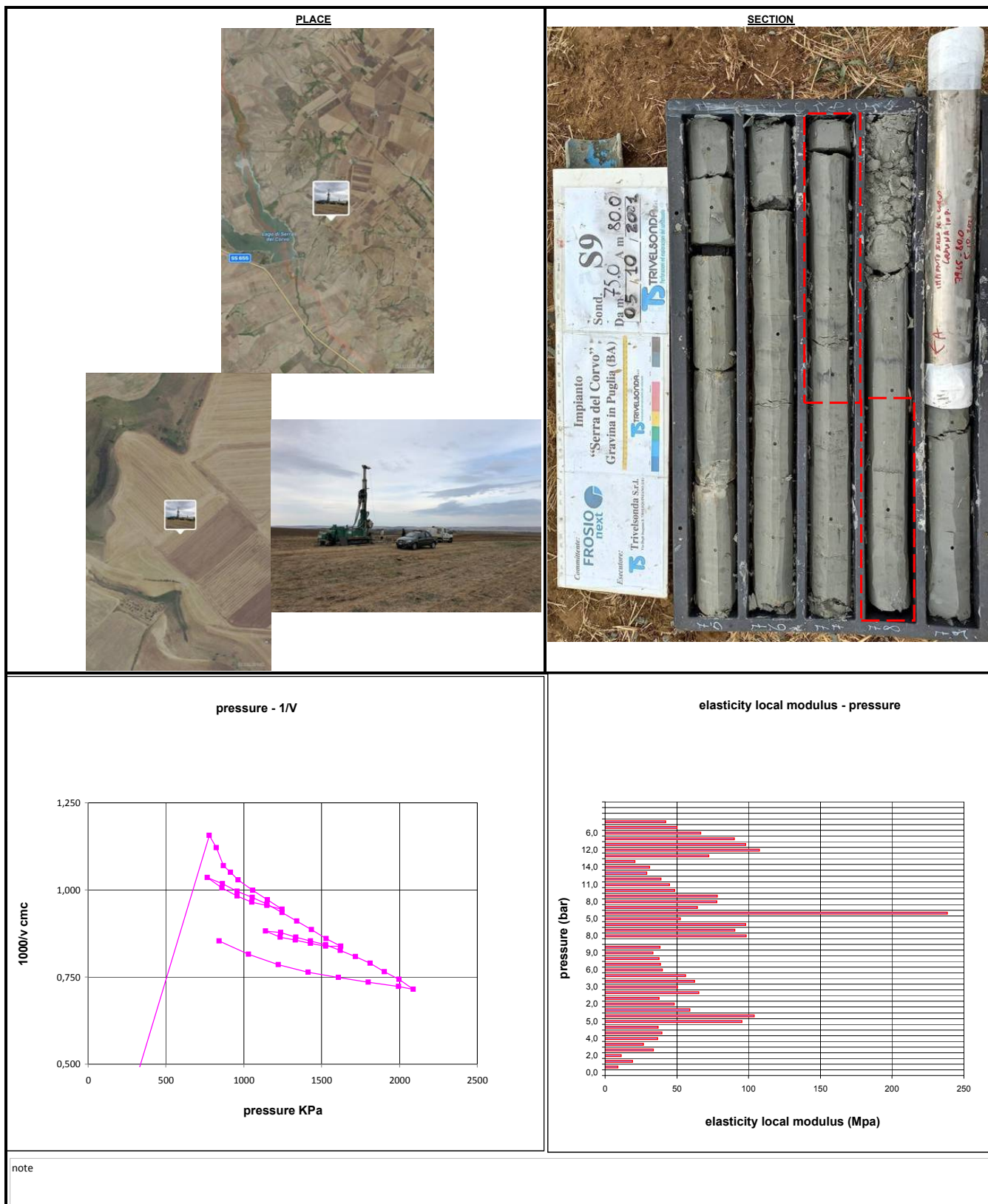
DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



DATA PROCESSING							SENSOR 1		SENSOR 2		SENSOR 3		SENSOR AVE					
Legend: H = test depth W = water table depth v = Poisson ratio vo = cell initial volume do =cell initial diameter Φ = borehole wall diameter Po = start pressure Pmax = max loop pressure (MPa) Pmin = min loop pressure (MPa) d max displacement at P max d min displacement at P min σv vertical total stress estimated ε c = dR / Ro				ELASTICITY MODULUS Ei														
				loop		Pmax	Pmin	E sensor 1 (Mpa)		E sensor2 (Mpa)		E sensor 3 (Mpa)		E1-E2-E3 average(Mpa)				
				symbol	datum	1	6,0	1,0							59			
				γsoil	2,2	2	10,0	5,0							96			
				W (ml)	78,0	3	15,0	4,0							72			
				v	0,45	4												
				vo (cmc)	2984	5												
				DEFORMATION MODULUS Ti														
				do (mm)		89,45	loop		Pmax	Pmin	T1 (Mpa)		T2 (Mpa)		T3 (Mpa)		Tm (Mpa)	
				σv (kPa)		1716	height mt		1	6,0	1,5							29
					2	10,0	6,0							33				
					3	15,0	10,0							27				
					4													
					5													
GLOBAL DEFORMATION MODULUS EG																		
ELASTICITY MODULUS Ei		ELASTICITY MODULUS Ey estimated																
Ei = (1+ v) Φ Pax - Pmin		Ey= (EII+EIII)/2																
dmax - dmin		Ey= EIII																
DEFORMATION MODULUS Ti				DIAMETER				F		F		F		F				
				begining diameter (mm)										101,942				
				final diameter (mm)										108,423				
				range mm										6,480				
Ti = (1+ v) Φ Pi - Pi-1				DM loop mininum displacement				DILATOMETRIC AND GEOTECHNICAL ESTIMATED PARAMETERS										
Xi - Xi-1				Pbar	C1	C2	C3	Cm	Po initial pressure (KPa)		963		EG (MPa)		30			
GLOBAL DEFORMATION MODULUS EG				bar	0	120	240	0	Pf creep pressure (KPa)		1812		E (MPa)		72			
EG = (1+ v) Φ Pmax - Po				6,0	10,997	10,997	10,997	14,672	PL limit pres. (KPa) Cassan >		2239		E/P/L		29,20			
dmax - do				10,0	11,342	11,342	11,342	16,377	PL' net limit pres (KPa) >		1038		EG/Ey		0,42			
				15,0	11,692	11,692	11,692	18,973	Ko lateral coeff at rest (KPa)		0,70		cu coesion (KPa) johnson>		249			
									Pho lateral pressure (KPa)		1201		φ friction angle (°) >					

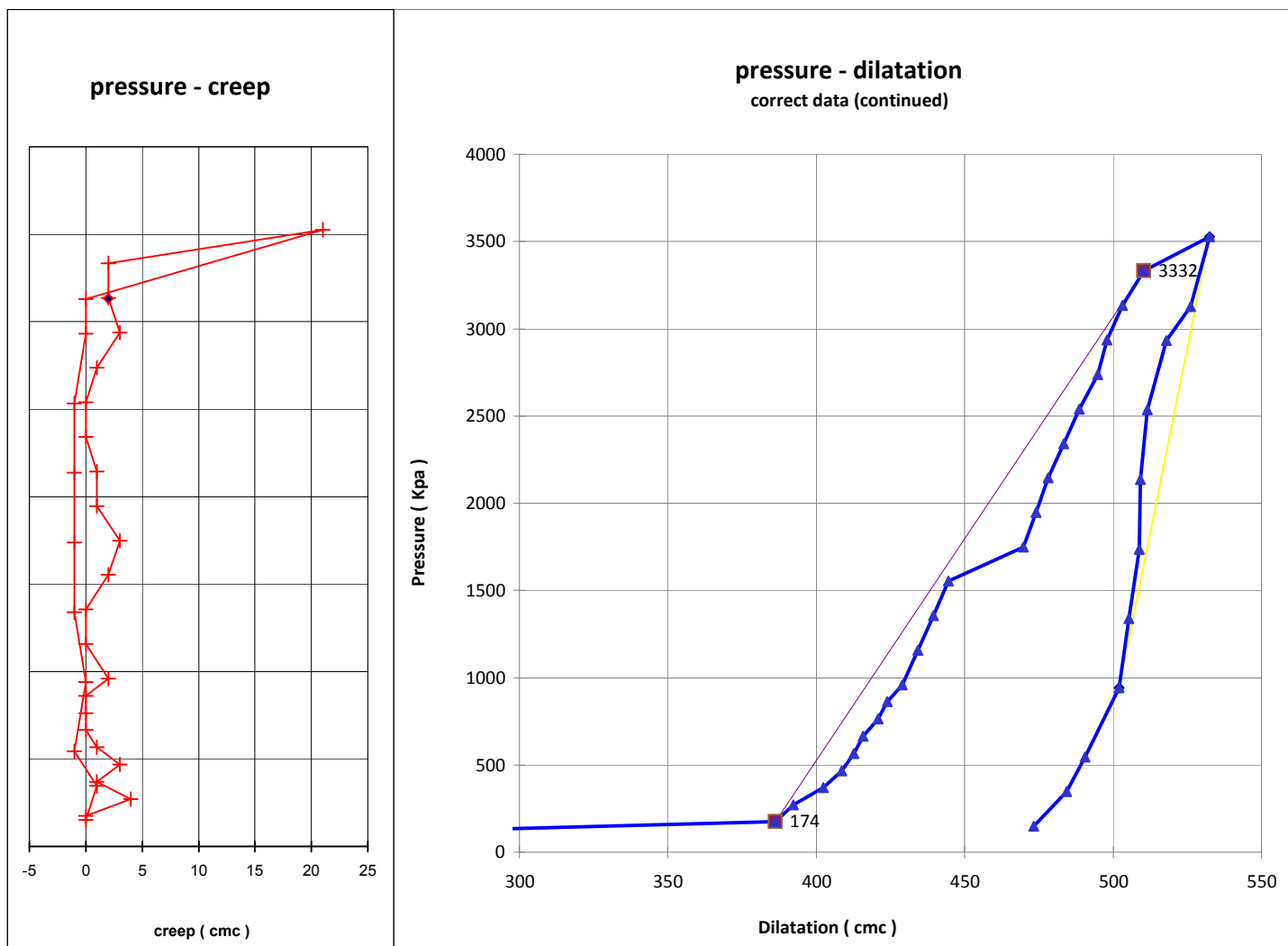
DILATOMETRIC ROCK TEST DRT						mod DVT REV3, 20 settembre 2020	
borehole	S9	probe depth m	78,0	code	3		
Client:	FROSIO NEXT			job	2140	v. accept.	2140
Project	IMPIANTO SERRA DEL CORVO			report	2140	DRT	
site	GRAVINA DI PUGLIA	coordinates	EAST	date	05.10.21	pag	3/3
			NORTH				

DILATOMETRIC ROCK TEST WITH VOLUME CHANGE MEASUREMENTS - ISRM 1987



	PRESSUREMETER TEST					mod MPT	rev 2.0	
	BOREHOLE	S10	DEPTH m	7,0	TEST CODE MPT	1		
	CLIENT					FROSIO NEXT	TYPE	SIT
	PROJECT					IMPIANTO SERRA DEL CORVO		
	OBJECT							
	COORDINATES							
	SITE	GRAVINA DI PUGLIA	DATE	04.11.21	PAGE	1/3		

weather _____ inclinazione 90 ° REAL test depth 7,0 m da p.c.
 hydrostatic level (m) > _____ us _____ KPa display by surface (m) 1,00 PP _____ KPA
 γ_n nat.grav assumed 2,00 t/mc Pressuremeter: APAGEO SEGELM
 σ_v assumed 140 kPa test pocket carotaggio 66 mm probe: tf63
 soil brief description SABBIA FINE AVANA CON LIVELLETTI DEBOLM. CEMENTATI pressuremeter modulus **Em** 152,9 MPa
 assumed elasticity modulus **Ey** 305,8 MPa
 mechanical behavior/geological unit _____ Em/P*L 29,38
 assumed cu _____ kPa
 test in according with ASTM D 4719 - 87 (1994) Pressuremeter Testing in Soils Friction angle (coesion effect included) 41 °



	PRESSUREMETER TEST						mod MPT	rev 1.0
	BOREHOLE	S10	DEPTH m	7,00	TEST CODE MPT	1		
	CLIENT	FROSIO NEXT	JOB N.	0	TYPE	SIT		
	PROJECT	IMPIANTO SERRA DEL CORVO						
	OBJECT							
	COORDINATES							
	SITE	GRAVINA DI PUGLIA	DATE	04.11.21	PAGE	2/3		

DATA PROCESSING

PRESSUREMETER CURVE LIMITS

	FIRST LOAD	LOOP 1	LOOP 2
initial pressure P1 (kPa)	174	3526	
initial volume pressure V1 (kPa)	386	533	
initial creep vol C1 (cmc)	0		
final pressure P2 (kPa)	3332	941	
final volume V2 (kPa)	510	502	
fin creep (cmc)/ unload Eu (Mpa)	2	523,5	

PHYSIC PROPERTIES

VP probe volume at rest	1812	cmc
VL probe limit volume	2584	cmc
V0 initial volume	386	cmc
1/VL	0,39	10 ⁻³ cmc
v poisson index	0,33	
α sp reologic experimental coeff.	0,29	
α reologic theoric coefficient	0,5	

SYSTEM CORRECTION

inertia cover	
kPa/cmc	0,27
syst. Dilatation	
cmc/Mpa	9,00

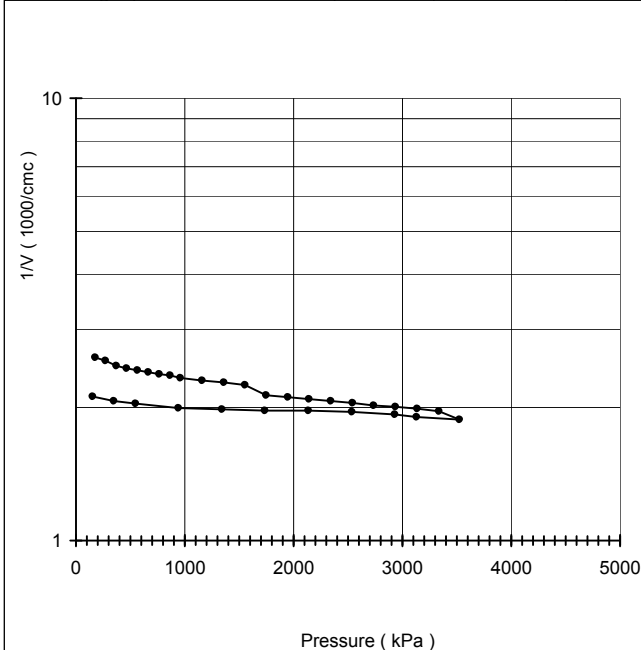
MPa

PRESSUREMETER PARAMETERS

Ko lateral coeff at rest assumed	0,50	
Pho estim. Horiz pres at rest	70	kPa
P0 measured initial pressure	174	kPa
Em pressuremeter modulus	152,9	MPa
Ey min elasticity mod. measured in unload	523,5	MPa
Ey elasticity mod. assumed by C. reologic	305,8	MPa
Pc creep pressure	3132	kPa
P*c net creep pressure	3062	kPa
PL limit pressure by Cassan	5275	kPa
PL limit pressure by Van Vambecke	8455	kPa
PL assumed limit pressure	5275	kPa
P*L assumed net limit pressure	5205	kPa
Em/P*L	29,38	
Ey/P*L	100,58	

ESTIMATED GEOTECHNICAL PARAMETERS

Assumed CU by Amar et Jezequel		kPa
Friction angle (coesion effect included)	41	°



DATA

	Pressure	Vr 30"	Vr 60"	P corr.	V corr.	creep	Modulus
n°	bars	cmc	cmc	kPa	cmc	cmc	MPa
1	0,0	0	0	0	0	0	
2	2,0	388	388	174	386	0	2,4
3	3,0	391	395	272	392	4	94,2
4	4,0	405	406	369	402	1	56,5
5	5,0	410	413	467	409	3	94,9
6	6,0	417	418	566	413	1	142,3
7	7,0	422	422	665	416	0	189,0
8	8,0	428	428	763	421	0	114,4
9	9,0	432	432	862	424	0	189,7
10	10,0	436	438	960	429	2	114,9
11	12,0	445	445	1158	434	0	227,4
12	14,0	452	452	1356	439	0	227,9
13	16,0	457	459	1555	445	2	228,4
14	18,0	483	486	1747	470	3	46,2
15	20,0	491	492	1946	474	1	287,0
16	22,0	497	498	2144	478	1	287,5
17	24,0	505	505	2342	483	0	232,4
18	26,0	512	512	2540	489	0	232,9
19	28,0	519	520	2738	495	1	195,5
20	30,0	522	525	2937	498	3	381,2
21	32,0	530	532	3135	503	2	234,4
22	34,0	539	541	3332	510	2	169,3
23	36,0	544	565	3526	533	21	54,1
24	32,0	555	555	3129	526	0	386,6
25	30,0	545	545	2931	518	0	149,4
26	26,0	536	535	2534	512	-1	384,2
27	22,0	530	529	2136	509	-1	1025,5
28	18,0	526	525	1737	509	-1	6157,4
29	14,0	519	518	1339	505	-1	722,3
30	10,0	511	511	941	502	0	721,3
31	6,0	497	496	545	491	-1	213,3
32	4,0	487	488	347	484	1	195,2
33	2,0	475	475	150	473	0	106,9

NOTE: ROTTURE LOCALI IN TRATTI CEMENTATI PIU RIGIDI

		PRESSUREMETER TEST				mod MPT rev 1.0	
		BOREHOLE	S10	DEPTH m	7,00	TEST CODE MPT	1
CLIENT	FROSIO NEXT			JOB N.	0	TYPE	SIT
PROJECT	IMPIANTO SERRA DEL CORVO						
OBJECT							
COORDINATES							
SITE	GRAVINA DI PUGLIA	DATE	04.11.21	PAGE	3/3		

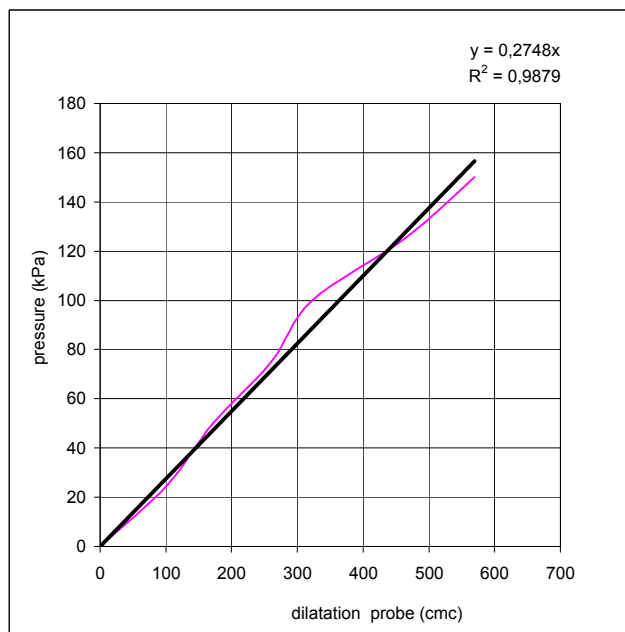
PLACE



CALIBRATION IN AIR

membrane no cover TELATA MORBIDA kPa/cmc 0,27

Height measure cell (cm) 60,00 VP in. probe vol (cmc) 1812



SOIL TYPE

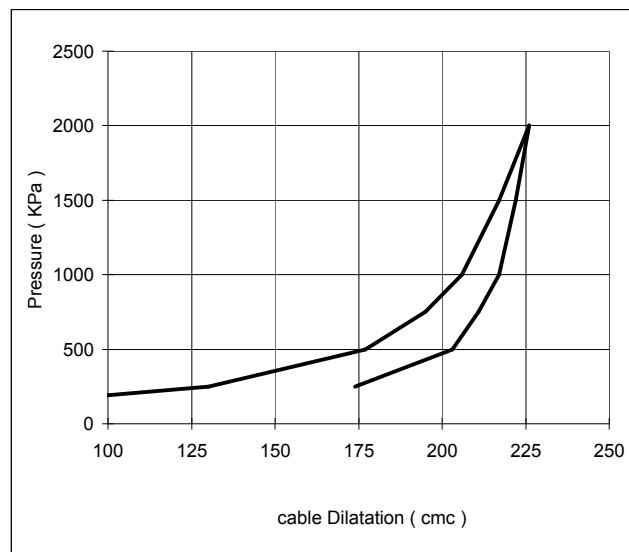


CONFINED CALIBRATION

Lenght cable 60 ϕ confined diameter (cm) 6,5

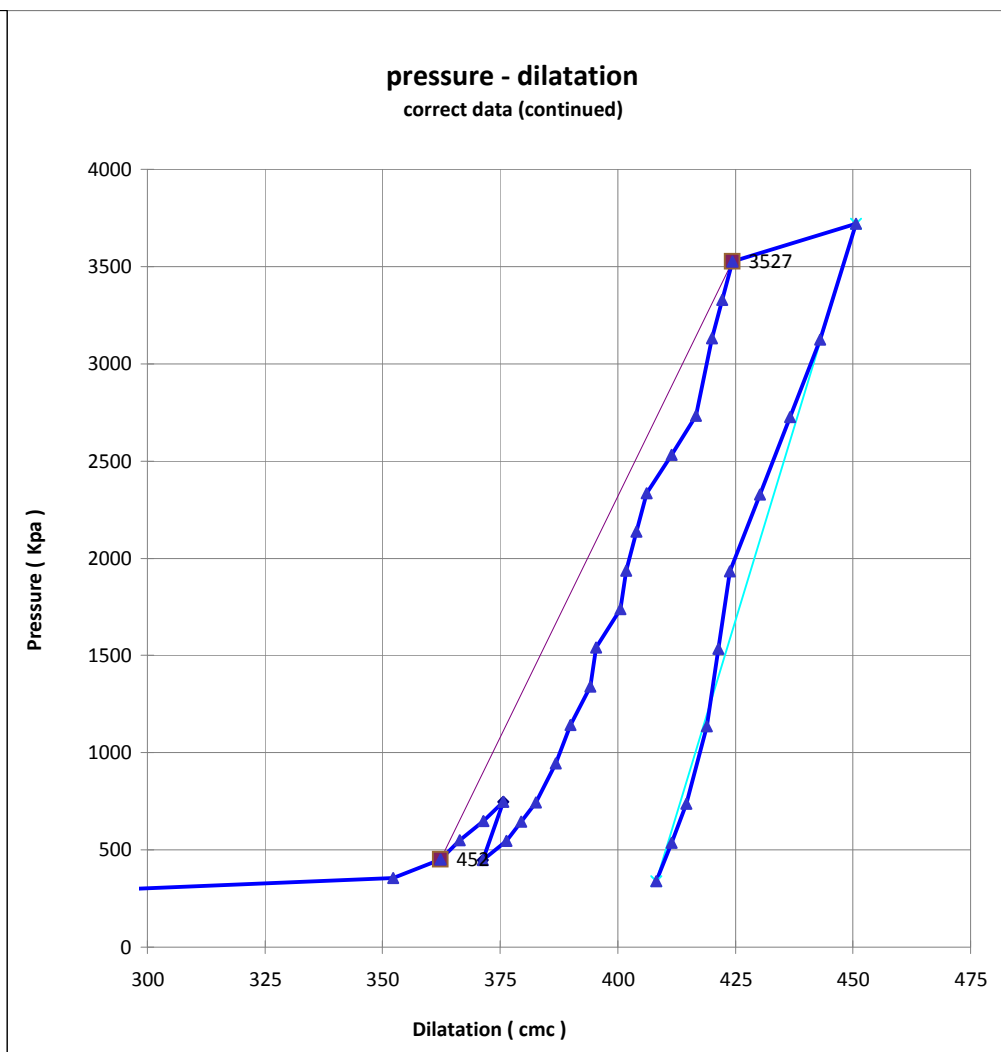
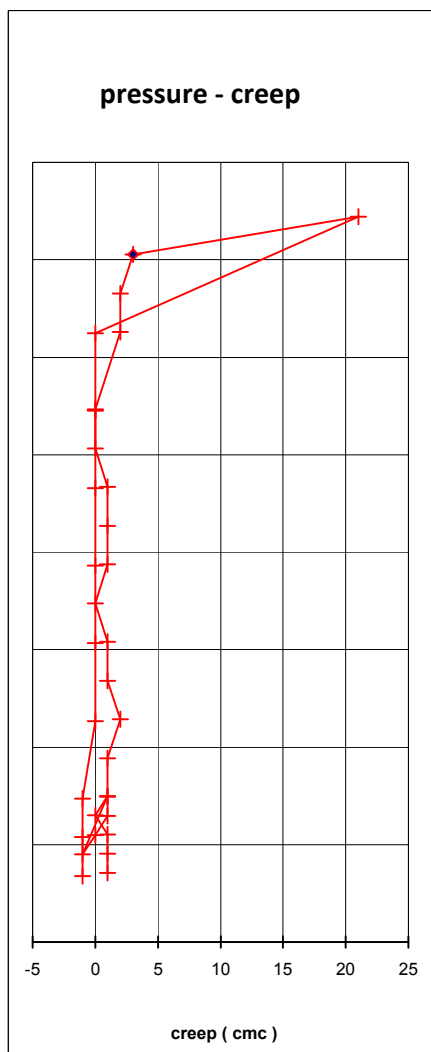
Vi (cmc) 179 Coeff. 20,00 cmc/Mpa first load

tube volume cmc 1991 Coeff. 9,00 cmc/Mpa unload



	PRESSUREMETER TEST					mod MPT	rev 2.0	
	BOREHOLE	S10	DEPTH m	24,5	TEST CODE MPT	2		
	CLIENT					FROSIO NEXT	TYPE	SIT
	PROJECT							IMPIANTO SERRA DEL CORVO
	OBJECT							
	COORDINATES							
	SITE	GRAVINA DI PUGLIA	DATE	05.11.21	PAGE	1/3		

weather _____ inclinazione 90 ° REAL test depth 24,5 m da p.c.
 hydrostatic level (m) > _____ us _____ KPa display by surface (m) 1,00 PP _____ KPA
 γ_n nat.grav assumed 2,00 t/mc Pressuremeter: APAGEO SEGELM
 σ_v assumed 490 kPa test pocket carotaggio 66 mm probe: tf63
 soil brief description SABBIA FINE DEBOLM. LIMOSA CON LIVELLETTI DEBOLM. CEMENTATI pressuremeter modulus **Em** 290,6 MPa
 assumed elasticity modulus **Ey** 433,7 MPa
 mechanical behavior/geological unit _____ E_m/P^*L 52,07
 assumed c_u _____ kPa
 test in according with ASTM D 4719 - 87 (1994) Pressuremeter Testing in Soils Friction angle (coesion effect included) **41** °



	PRESSUREMETER TEST						mod MPT	rev 1.0
	BOREHOLE	S10	DEPTH m	24,50	TEST CODE MPT	2		
	CLIENT	FROSIO NEXT	JOB N.	0	TYPE	SIT		
	PROJECT	IMPIANTO SERRA DEL CORVO						
	OBJECT							
	COORDINATES							
	SITE	GRAVINA DI PUGLIA	DATE	05.11.21	PAGE	2/3		

DATA PROCESSING

PRESSUREMETER CURVE LIMITS

	FIRST LOAD	LOOP 1	LOOP 2
initial pressure P1 (kPa)	452	747	3720
initial volume pressure V1 (kPa)	362	376	451
initial creep vol C1 (cmc)	1		
final pressure P2 (kPa)	3527	449	339
final volume V2 (kPa)	424	371	408
fin creep (cmc)/ unload Eu (Mpa)	3	403,0	475,3

PHYSIC PROPERTIES

VP probe volume at rest	1812	cmc
VL probe limit volume	2537	cmc
V0 initial volume	362	cmc
1/VL	0,39	10 ⁻³ cmc
v poisson index	0,33	
α sp reologic experimental coeff.	0,61	
α reologic theoric coefficient	0,67	

SYSTEM CORRECTION

inertia cover	
kPa/cmc	0,27
syst. Dilatation	
cmc/Mpa	9,00

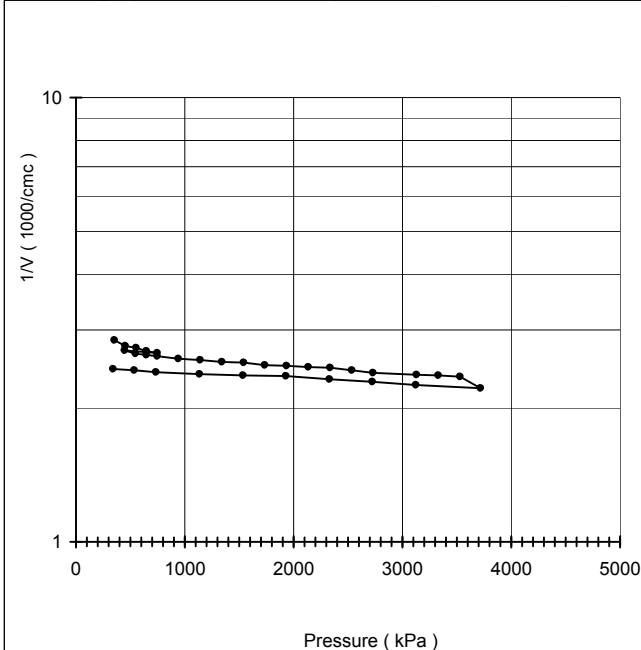
MPa

PRESSUREMETER PARAMETERS

Ko lateral coeff at rest assumed	0,50	
Pho estim. Horiz pres at rest	245	kPa
P0 measured initial pressure	355	kPa
Em pressuremeter modulus	290,6	MPa
Ey min elasticity mod. measured in unload	475,3	MPa
Ey elasticity mod. assumed by C. reologic	433,7	MPa
Pc creep pressure	3527	kPa
P*c net creep pressure	3282	kPa
PL limit pressure by Cassan	5825	kPa
PL limit pressure by Van Vambecke	6283	kPa
PL assumed limit pressure	5825	kPa
P*L assumed net limit pressure	5580	kPa
Em/P*L	52,07	
Ey/P*L	85,19	

ESTIMATED GEOTECHNICAL PARAMETERS

Assumed CU by Amar et Jezequel		kPa
Friction angle (coesion effect included)	41	°

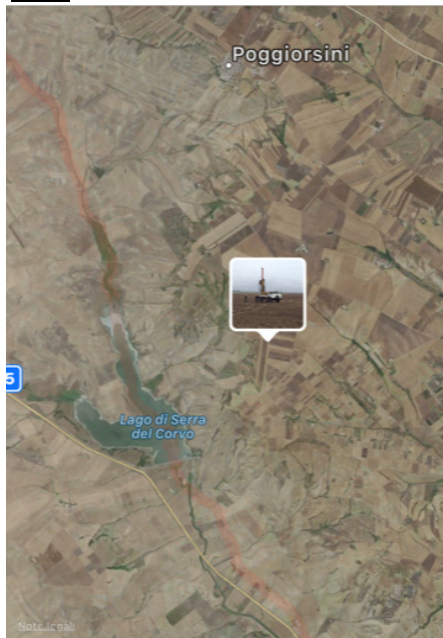


DATA

	Pressure	Vr 30"	Vr 60"	P corr.	V corr.	creep	Modulus
n°	bars	cmc	cmc	kPa	cmc	cmc	MPa
1	0,0	0	0	0	0	0	
2	2,0	353	354	355	352	1	5,3
3	3,0	364	365	452	362	1	55,4
4	4,0	369	370	550	366	1	139,3
5	5,0	376	376	649	372	0	111,9
6	6,0	380	381	747	376	1	139,9
7	3,0	375	374	449	371	-1	403,0
8	4,0	380	380	548	376	0	112,2
9	5,0	383	384	646	380	1	185,9
10	6,0	387	388	745	383	1	186,2
11	8,0	393	394	944	387	1	276,0
12	10,0	397	399	1142	390	2	363,4
13	12,0	404	405	1341	394	1	276,9
14	14,0	407	408	1540	395	1	974,4
15	16,0	415	415	1738	401	0	224,0
16	18,0	417	418	1937	402	1	977,2
17	20,0	421	422	2136	404	1	532,7
18	22,0	425	426	2335	406	1	533,3
19	24,0	433	433	2533	411	0	225,1
20	26,0	440	440	2731	417	0	225,6
21	30,0	445	447	3129	420	2	694,7
22	32,0	449	451	3328	422	2	537,1
23	34,0	452	455	3527	424	3	537,6
24	36,0	462	483	3720	451	21	44,0
25	30,0	470	470	3123	443	0	471,6
26	26,0	460	460	2726	437	0	371,8
27	22,0	450	450	2329	430	0	370,8
28	18,0	440	440	1931	424	0	369,7
29	14,0	434	434	1533	421	0	986,7
30	10,0	428	428	1135	419	0	985,6
31	6,0	421	420	737	415	-1	536,1
32	4,0	416	415	538	411	-1	367,4
33	2,0	411	410	339	408	-1	366,9

		PRESSUREMETER TEST				mod MPT rev 1.0	
		BOREHOLE	S10	DEPTH m	24,50	TEST CODE MPT	2
CLIENT	FROSIO NEXT		JOB N.	0	TYPE	SIT	
PROJECT	IMPIANTO SERRA DEL CORVO						
OBJECT							
COORDINATES							
SITE	GRAVINA DI PUGLIA	DATE	05.11.21	PAGE	3/3		

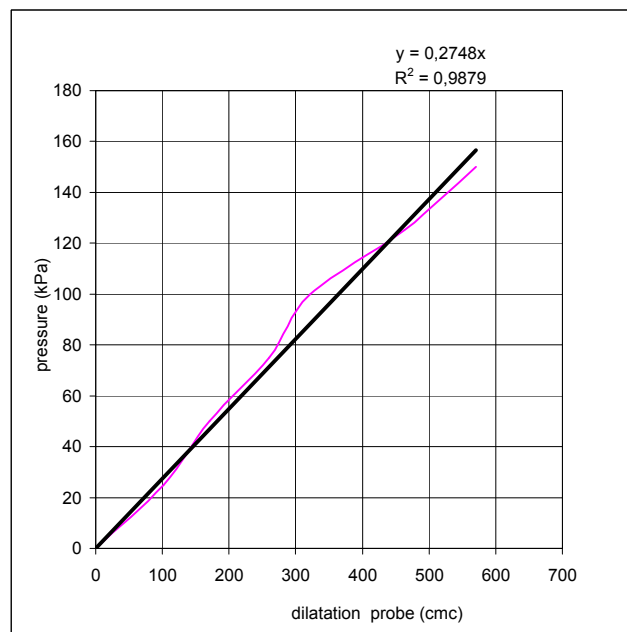
PLACE



CALIBRATION IN AIR

membrane no cover TELATA MORBIDA kPa/cmc 0,27

Height measure cell (cm) 60,00 VP in. probe vol (cmc) 1812



SOIL TYPE

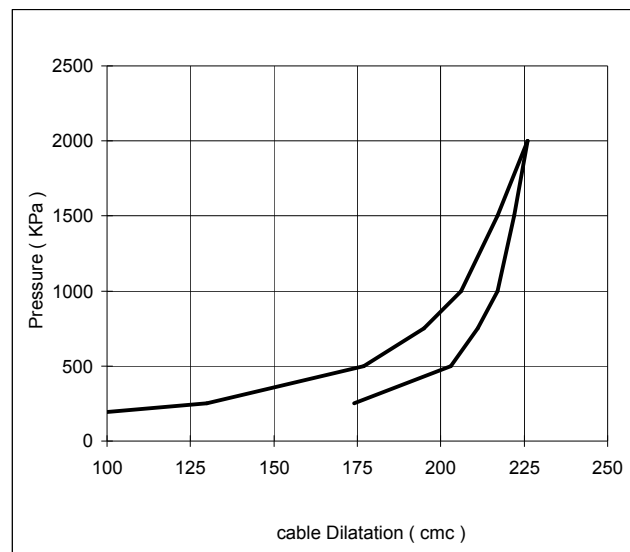


CONFINED CALIBRATION

Lenght cable 60 ϕ confined diameter (cm) 6,5

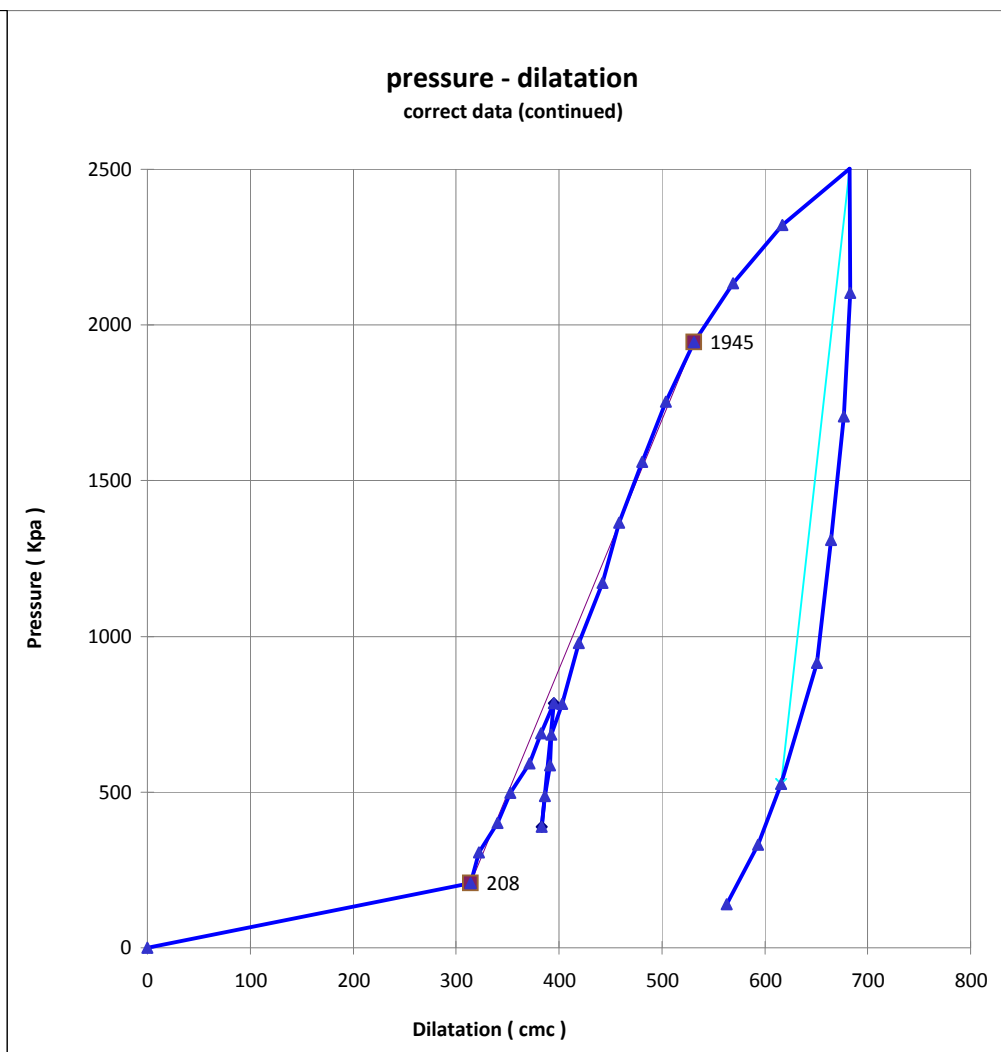
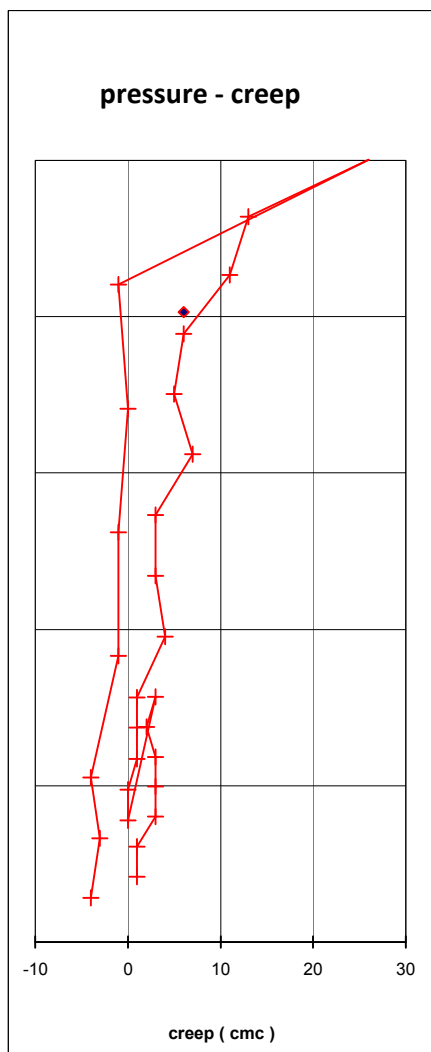
Vi (cmc) 179 Coeff. 20,00 cmc/Mpa first load

tube volume cmc 1991 Coeff. 9,00 cmc/Mpa unload



	PRESSUREMETER TEST					mod MPT	rev 2.0
	BOREHOLE	S11	DEPTH m	8,5	TEST CODE MPT	1	
	CLIENT	FROSIO NEXT				TYPE	SIT
	PROJECT	IMPIANTO SERRA DEL CORVO					
	OBJECT						
	COORDINATES						
SITE	GRAVINA DI PUGLIA	DATE	08.11.21	PAGE	1/3		

weather _____ inclinazione 90 ° REAL test depth 8,5 m da p.c.
 hydrostatic level (m) > 8,00 us 78 KPa display by surface (m) 1,00 PP _____ KPA
 γ_n nat.grav assumed 2,00 t/mc Pressuremeter: APAGEO SEGELM
 σ_v assumed 170 kPa test pocket carotaggio 66 mm probe: tf63
 soil brief description LIMO CON SABBIA FINE ARGILLOSA pressuremeter modulus **Em** 47,6 MPa
 assumed elasticity modulus **Ey** 71,1 MPa
 mechanical behavior/geological unit _____ Em/P*L 14,97
 assumed cu 343 kPa
 test in according with ASTM D 4719 - 87 (1994) Pressuremeter Testing in Soils Friction angle (coesion effect included) _____ °



	PRESSUREMETER TEST						mod MPT	rev 1.0
	BOREHOLE	S11	DEPTH m	8,50	TEST CODE MPT	1		
	CLIENT	FROSIO NEXT	JOB N.		TYPE	SIT		
	PROJECT	IMPIANTO SERRA DEL CORVO						
	OBJECT							
	COORDINATES							
	SITE	GRAVINA DI PUGLIA	DATE	08.11.21	PAGE	2/3		

DATA PROCESSING

PRESSUREMETER CURVE LIMITS

	FIRST LOAD	LOOP 1	LOOP 2
initial pressure P1 (kPa)	208	785	2503
initial volume pressure V1 (kPa)	314	395	683
initial creep vol C1 (cmc)	1		
final pressure P2 (kPa)	1945	389	526
final volume V2 (kPa)	531	383	616
fin creep (cmc)/ unload Eu (Mpa)	6	203,4	193,2

PHYSIC PROPERTIES

VP probe volume at rest	1812	cmc
VL probe limit volume	2440	cmc
V0 initial volume	314	cmc
1/VL	0,41	10 ⁻³ cmc
v poisson index	0,33	
α sp reologic experimental coeff.	0,25	
α reologic theoric coefficient	0,67	

SYSTEM CORRECTION

inertia cover	
kPa/cmc	0,27
syst. Dilatation	
cmc/Mpa	9,00

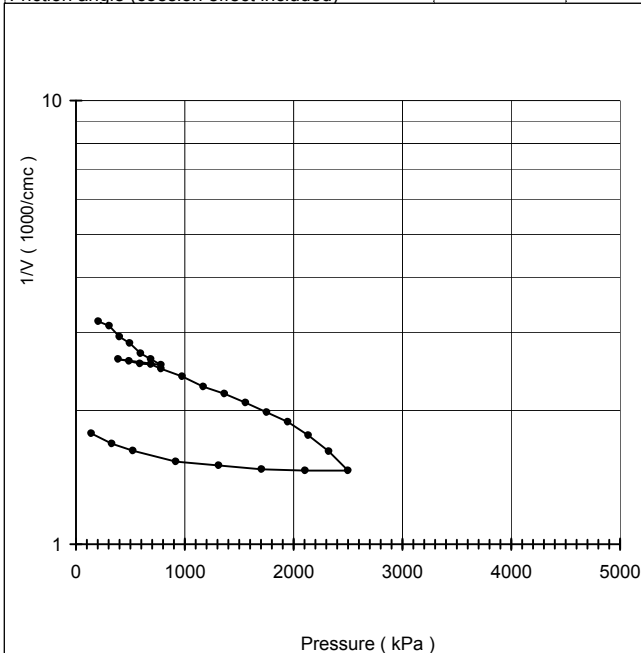
MPa

PRESSUREMETER PARAMETERS

Ko lateral coeff at rest assumed	0,70	
Pho estim. Horiz pres at rest	143	kPa
P0 measured initial pressure	208	kPa
Em pressuremeter modulus	47,6	MPa
Ey min elasticity mod. measured in unload	193,2	MPa
Ey elasticity mod. assumed by C. reologic	71,1	MPa
Pc creep pressure	2015	kPa
P*c net creep pressure	1872	kPa
PL limit pressure by Cassan	3325	kPa
PL limit pressure by Van Vambecke	3837	kPa
PL assumed limit pressure	3325	kPa
P*L assumed net limit pressure	3183	kPa
Em/P*L	14,97	
Ey/P*L	60,70	

ESTIMATED GEOTECHNICAL PARAMETERS

Assumed CU by Amar et Jezequel	343	kPa
Friction angle (coesion effect included)		°



DATA

	Pressure	Vr 30"	Vr 60"	P corr.	V corr.	creep	Modulus
n°	bars	cmc	cmc	kPa	cmc	cmc	MPa
1	0,0	0	0	0	0	0	
2	2,0	315	316	208	314	1	3,5
3	3,0	324	325	305	322	1	68,3
4	4,0	341	344	400	340	3	29,9
5	5,0	354	357	497	353	3	45,8
6	6,0	374	377	591	372	3	28,6
7	7,0	387	389	688	383	2	50,8
8	8,0	399	402	785	395	3	46,7
9	4,0	387	387	389	383	0	203,4
10	5,0	391	391	488	387	0	186,5
11	6,0	396	397	586	392	1	112,9
12	7,0	398	399	685	393	1	530,1
13	8,0	409	410	782	403	1	56,5
14	10,0	424	428	978	419	4	71,2
15	12,0	450	453	1171	442	3	49,7
16	14,0	468	471	1366	458	3	72,5
17	16,0	488	495	1560	481	7	52,9
18	18,0	515	520	1753	504	5	51,1
19	20,0	543	549	1945	531	6	43,8
20	22,0	578	589	2134	569	11	31,1
21	24,0	626	639	2321	617	13	24,8
22	26,0	680	706	2503	683	26	18,3
23	22,0	704	703	2103	683	-1	-4415,5
24	18,0	693	693	1706	677	0	411,5
25	14,0	678	677	1310	664	-1	210,7
26	10,0	661	660	915	651	-1	193,9
27	6,0	625	621	526	616	-4	71,6
28	4,0	600	597	332	593	-3	56,0
29	2,0	569	565	141	563	-4	40,3

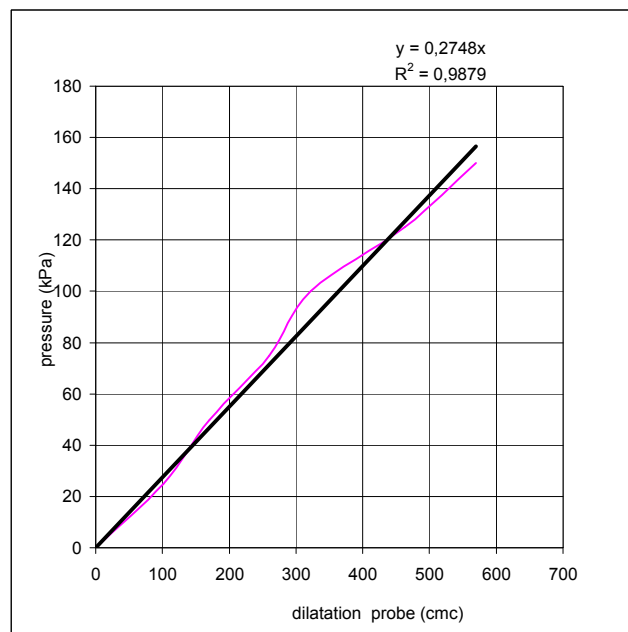
	PRESSUREMETER TEST						mod MPT	rev 1.0
	BOREHOLE	S11	DEPTH m	8,50	TEST CODE MPT		1	
	CLIENT	FROSIO NEXT	JOB N.	0	TYPE	SIT		
	PROJECT	IMPIANTO SERRA DEL CORVO						
	OBJECT							
	COORDINATES							
	SITE	GRAVINA DI PUGLIA	DATE	08.11.21	PAGE	3/3		

PLACE

CALIBRATION IN AIR

membrane no cover TELATA MORBIDA kPa/cmc 0,27

Height measure cell (cm) 60,00 VP in. probe vol (cmc) 1812



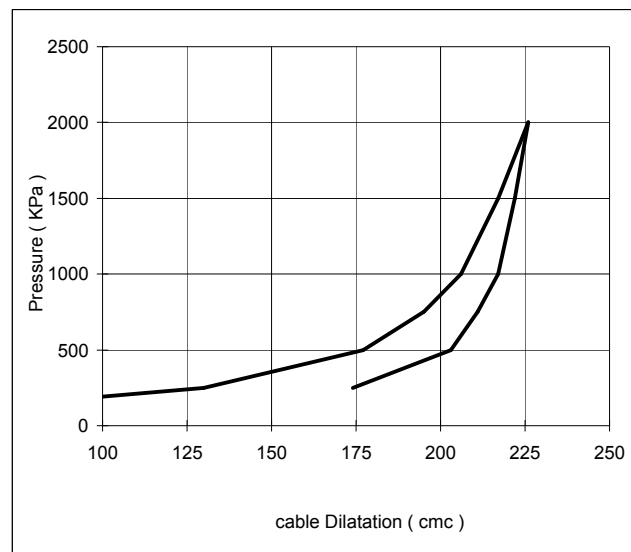
SOIL TYPE

CONFINED CALIBRATION

Lenght cable 60 ϕ confined diameter (cm) 6,5

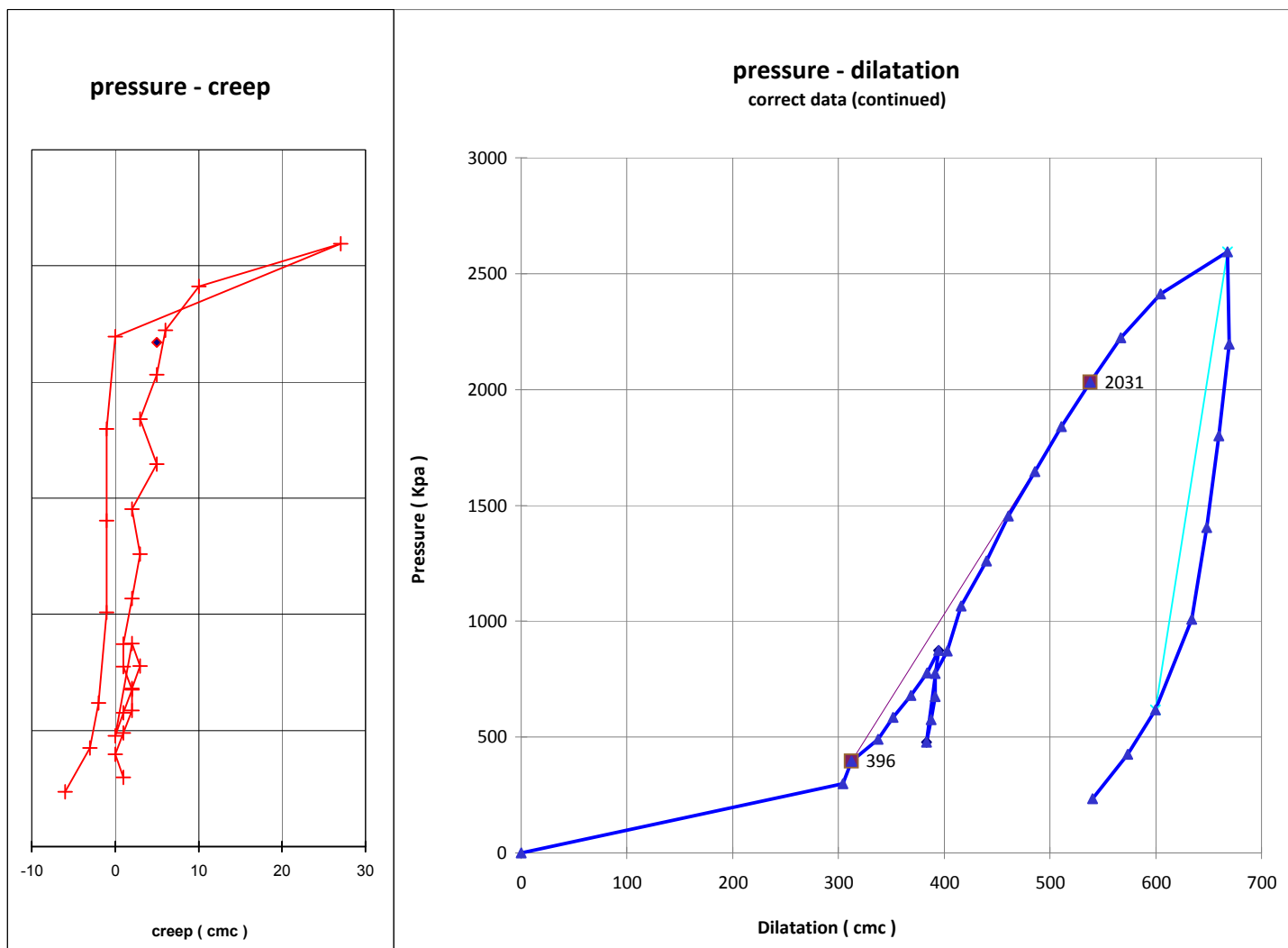
Vi (cmc) 179 Coeff. 20,00 cmc/Mpa first load

tube volume cmc 1991 Coeff. 9,00 cmc/Mpa unload



PRESSUREMETER TEST						mod MPT	rev 2.0
BOREHOLE	S11	DEPTH m	17,5	TEST CODE MPT	2		
CLIENT	FROSIO NEXT			TYPE	SIT		
PROJECT	IMPIANTO SERRA DEL CORVO						
OBJECT							
COORDINATES							
SITE	GRAVINA DI PUGLIA	DATE	08.11.21	PAGE	1/3		

weather _____ inclinazione 90 ° REAL test depth 17,5 m da p.c.
 hydrostatic level (m) > 8,00 us _____ KPa display by surface (m) 1,00 PP _____ KPA
 γ_n nat.grav assumed 2,00 t/mc Pressuremeter: APAGEO SEGELM
 σ_v assumed 350 kPa test pocket carotaggio 66 mm probe: tf63
 soil brief description LIMO CON SABBIA E ARGILLA pressuremeter modulus E_m 43,1 MPa
 assumed elasticity modulus E_y 64,3 MPa
 mechanical behavior/geological unit _____ E_m/P^*L 13,18
 assumed c_u 352 kPa
 test in according with ASTM D 4719 - 87 (1994) Pressuremeter Testing in Soils Friction angle (coesion effect included) _____ °



	PRESSUREMETER TEST						mod MPT	rev 1.0
	BOREHOLE	S11	DEPTH m	17,50	TEST CODE MPT	2		
	CLIENT	FROSIO NEXT	JOB N.		TYPE	SIT		
	PROJECT	IMPIANTO SERRA DEL CORVO						
	OBJECT							
	COORDINATES							
	SITE	GRAVINA DI PUGLIA	DATE	08.11.21	PAGE	2/3		

DATA PROCESSING

PRESSUREMETER CURVE LIMITS

	FIRST LOAD	LOOP 1	LOOP 2
initial pressure P1 (kPa)	396	873	2595
initial volume pressure V1 (kPa)	312	395	668
initial creep vol C1 (cmc)	0		
final pressure P2 (kPa)	2031	477	618
final volume V2 (kPa)	538	383	600
fin creep (cmc)/ unload Eu (Mpa)	5	203,4	189,1

PHYSIC PROPERTIES

VP probe volume at rest	1812	cmc
VL probe limit volume	2437	cmc
V0 initial volume	312	cmc
1/VL	0,41	10 ⁻³ cmc
v poisson index	0,33	
α sp reologic experimental coeff.	0,23	
α reologic theoric coefficient	0,67	

SYSTEM CORRECTION

inertia cover	
kPa/cmc	0,27
syst. Dilatation	
cmc/Mpa	9,00

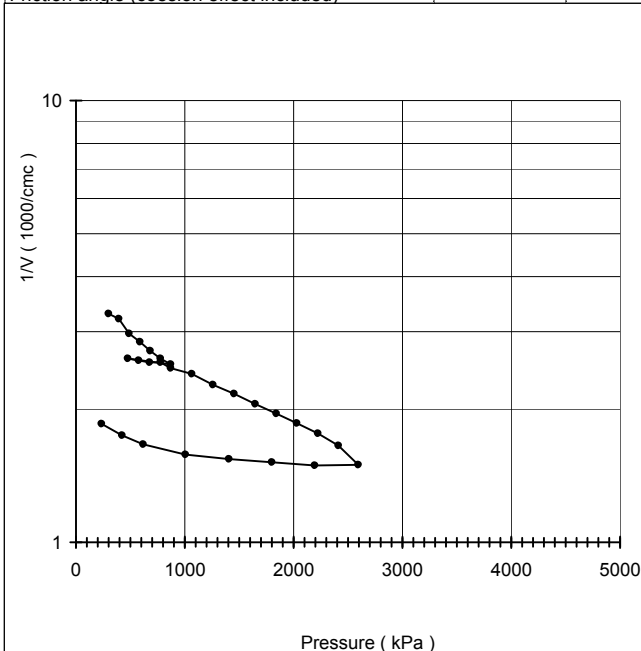
MPa

PRESSUREMETER PARAMETERS

Ko lateral coeff at rest assumed	0,70	
Pho estim. Horiz pres at rest	245	kPa
P0 measured initial pressure	299	kPa
Em pressuremeter modulus	43,1	MPa
Ey min elasticity mod. measured in unload	189,1	MPa
Ey elasticity mod. assumed by C. reologic	64,3	MPa
Pc creep pressure	2170	kPa
P*c net creep pressure	1925	kPa
PL limit pressure by Cassan	3517	kPa
PL limit pressure by Van Vambecke	4112	kPa
PL assumed limit pressure	3517	kPa
P*L assumed net limit pressure	3272	kPa
Em/P*L	13,18	
Ey/P*L	57,80	

ESTIMATED GEOTECHNICAL PARAMETERS

Assumed CU by Amar et Jezequel	352	kPa
Friction angle (coesion effect included)		°



DATA

	Pressure	Vr 30"	Vr 60"	P corr.	V corr.	creep	Modulus
n°	bars	cmc	cmc	kPa	cmc	cmc	MPa
1	0,0	0	0	0	0	0	
2	2,0	305	306	299	304	1	5,1
3	3,0	315	315	396	312	0	67,9
4	4,0	340	341	489	337	1	21,1
5	5,0	354	356	585	352	2	39,0
6	6,0	372	374	681	369	2	32,1
7	7,0	387	390	776	384	3	36,9
8	8,0	400	402	873	395	2	51,0
9	4,0	387	387	477	383	0	203,4
10	5,0	391	392	576	388	1	140,6
11	6,0	395	397	674	392	2	140,9
12	7,0	397	398	774	392	1	5846,1
13	8,0	409	410	871	403	1	51,2
14	10,0	423	425	1067	416	2	87,7
15	12,0	448	451	1260	440	3	47,5
16	14,0	471	473	1454	460	2	57,8
17	16,0	495	500	1646	486	5	46,5
18	18,0	524	527	1839	511	3	47,0
19	20,0	551	556	2031	538	5	43,9
20	22,0	581	587	2223	567	6	41,3
21	24,0	616	626	2412	604	10	32,5
22	26,0	664	691	2595	668	27	18,8
23	22,0	689	689	2195	669	0	-1647,3
24	18,0	677	676	1799	660	-1	277,9
25	14,0	662	661	1403	648	-1	227,8
26	10,0	644	643	1008	634	-1	179,1
27	6,0	607	605	618	600	-2	73,2
28	4,0	580	577	426	573	-3	46,9
29	2,0	548	542	235	540	-6	36,2

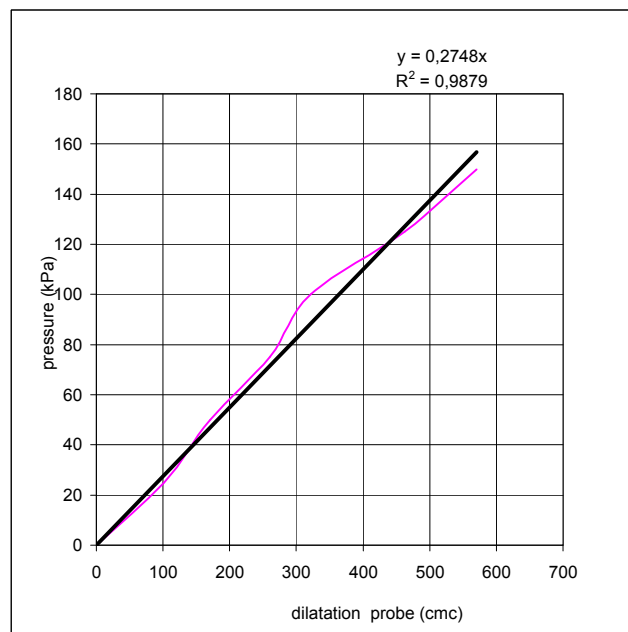
		PRESSUREMETER TEST				mod MPT rev 1.0	
		BOREHOLE	S11	DEPTH m	17,50	TEST CODE MPT	2
CLIENT	FROSIO NEXT			JOB N.	0	TYPE	SIT
PROJECT	IMPIANTO SERRA DEL CORVO						
OBJECT							
COORDINATES							
SITE	GRAVINA DI PUGLIA	DATE	08.11.21	PAGE	3/3		

PLACE

CALIBRATION IN AIR

membrane no cover TELATA MORBIDA kPa/cmc 0,27

Height measure cell (cm) 60,00 VP in. probe vol (cmc) 1812



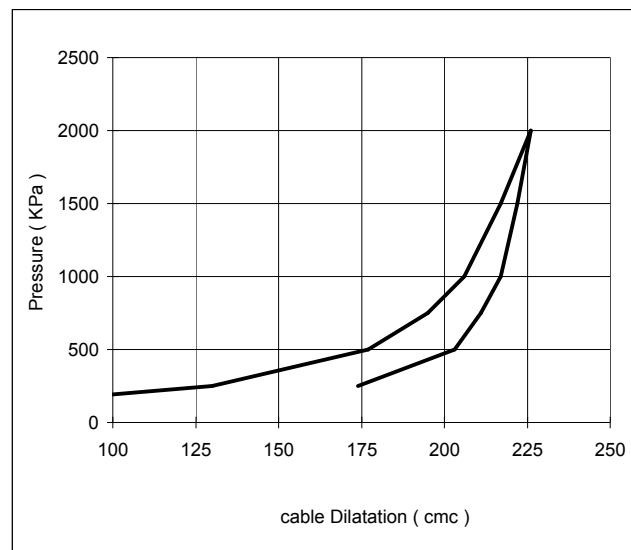
SOIL TYPE

CONFINED CALIBRATION

Lenght cable 60 ϕ confined diameter (cm) 6,5

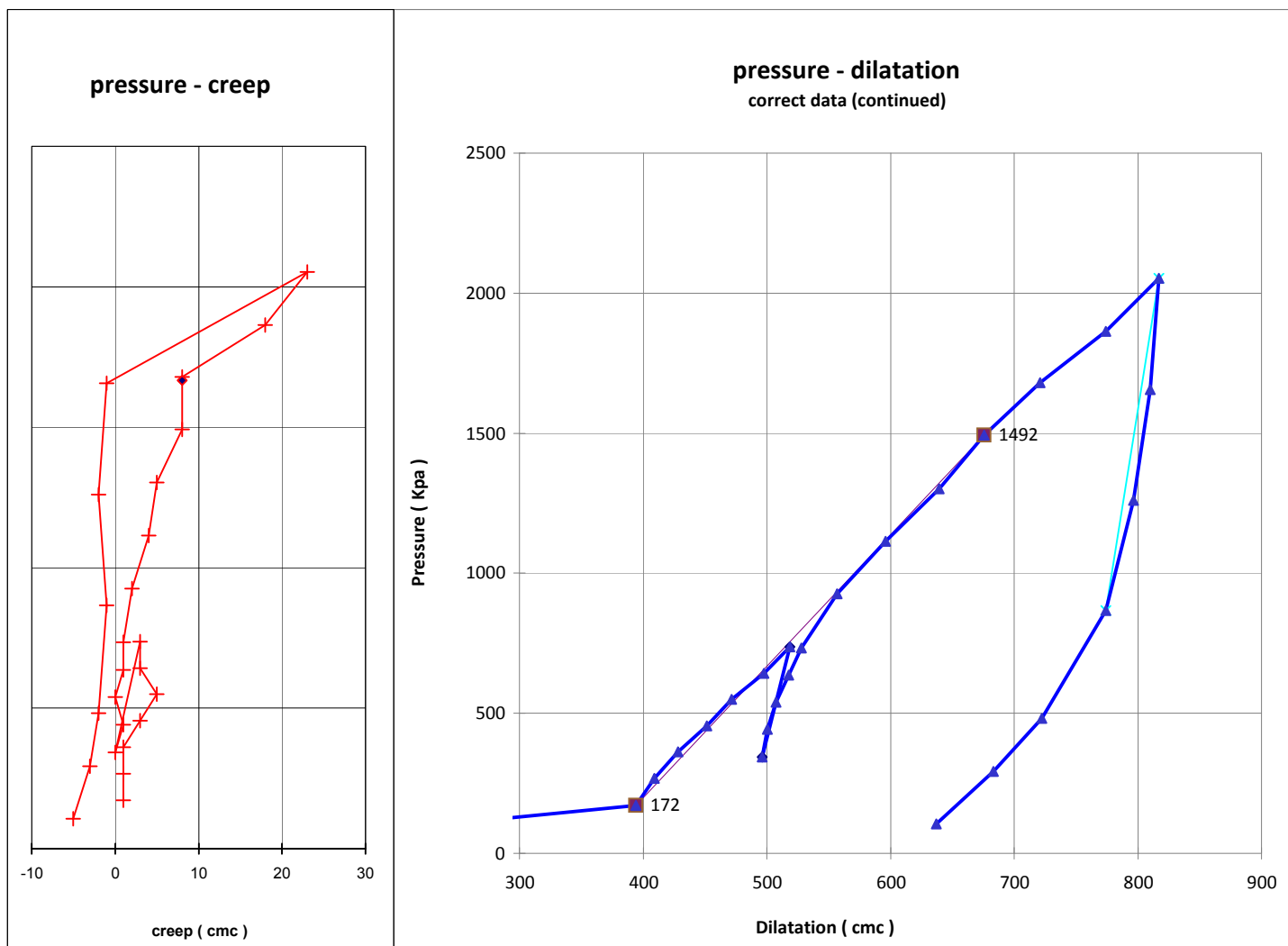
Vi (cmc) 179 Coeff. 20,00 cmc/Mpa first load

tube volume cmc 1991 Coeff. 9,00 cmc/Mpa unload



		PRESSUREMETER TEST				mod MPT rev 2.0	
		BOREHOLE	S12	DEPTH m	7,0	TEST CODE MPT	1
CLIENT	FROSIO NEXT				TYPE	SIT	
PROJECT	IMPIANTO SERRA DEL CORVO						
OBJECT							
COORDINATES							
SITE	GRAVINA DI PUGLIA	DATE	10.11.21	PAGE	1/3		

weather _____ inclinazione 90 ° REAL test depth 7,0 m da p.c.
 hydrostatic level (m) > _____ us _____ KPa display by surface (m) 1,00 PP _____ KPA
 γ nat.grav assumed 2,00 t/mc Pressuremeter: APAGEO SEGELM
 σ_v assumed 140 kPa test pocket carotaggio 66 mm probe: tf63
 soil brief description LIMO ARGILLOSO CON LIVELLI SABBIOSI pressuremeter modulus E_m 29,3 MPa
 assumed elasticity modulus E_y 43,7 MPa
 mechanical behavior/geological unit _____ E_m/P^*L 10,99
 assumed c_u 292 kPa
 test in according with ASTM D 4719 - 87 (1994) Pressuremeter Testing in Soils Friction angle (coesion effect included) _____ °



	PRESSUREMETER TEST						mod MPT	rev 1.0
	BOREHOLE	S12	DEPTH m	7,00	TEST CODE MPT	1		
	CLIENT	FROSIO NEXT	JOB N.		TYPE	SIT		
	PROJECT	IMPIANTO SERRA DEL CORVO						
	OBJECT							
	COORDINATES							
	SITE	GRAVINA DI PUGLIA	DATE	10.11.21	PAGE	2/3		

DATA PROCESSING

PRESSUREMETER CURVE LIMITS

	FIRST LOAD	LOOP 1	LOOP 2
initial pressure P1 (kPa)	172	736	2052
initial volume pressure V1 (kPa)	394	519	817
initial creep vol C1 (cmc)	1		
final pressure P2 (kPa)	1492	343	867
final volume V2 (kPa)	676	496	774
fin creep (cmc)/ unload Eu (Mpa)	8	108,3	190,3

PHYSIC PROPERTIES

VP probe volume at rest	1812	cmc
VL probe limit volume	2600	cmc
V0 initial volume	394	cmc
1/VL	0,38	10 ⁻³ cmc
v poisson index	0,33	
α sp reologic experimental coeff.	0,15	
α reologic theoric coefficient	0,67	

SYSTEM CORRECTION

inertia cover	
kPa/cmc	0,27
syst. Dilatation	
cmc/Mpa	9,00

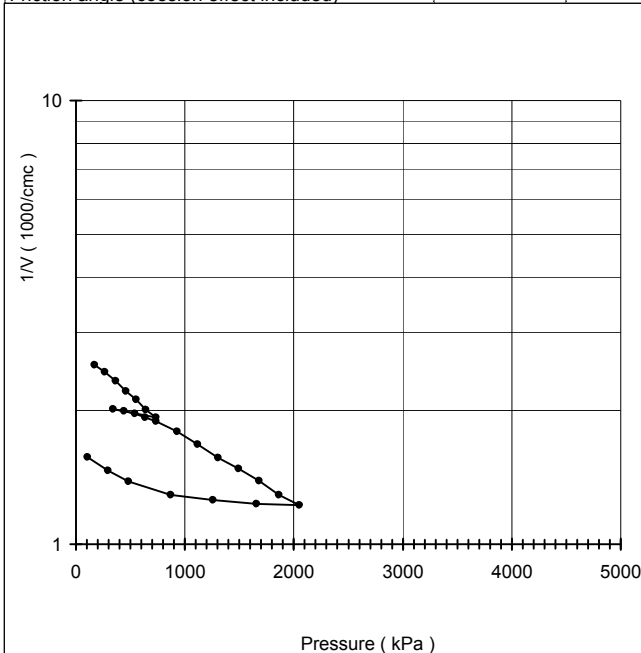
MPa

PRESSUREMETER PARAMETERS

Ko lateral coeff at rest assumed	0,70	
Pho estim. Horiz pres at rest	98	kPa
P0 measured initial pressure	172	kPa
Em pressuremeter modulus	29,3	MPa
Ey min elasticity mod. measured in unload	190,3	MPa
Ey elasticity mod. assumed by C. reologic	43,7	MPa
Pc creep pressure	1666	kPa
P*c net creep pressure	1568	kPa
PL limit pressure by Cassan	2763	kPa
PL limit pressure by Van Vambecke	3935	kPa
PL assumed limit pressure	2763	kPa
P*L assumed net limit pressure	2665	kPa
Em/P*L	10,99	
Ey/P*L	71,41	

ESTIMATED GEOTECHNICAL PARAMETERS

Assumed CU by Amar et Jezequel	292	kPa
Friction angle (coesion effect included)		°



DATA

	Pressure	Vr 30"	Vr 60"	P corr.	V corr.	creep	Modulus
n°	bars	cmc	cmc	kPa	cmc	cmc	MPa
1	0,0	0	0	0	0	0	
2	2,0	395	396	172	394	1	2,3
3	3,0	411	412	267	409	1	37,3
4	4,0	431	432	362	428	1	29,4
5	5,0	453	456	455	452	3	24,3
6	6,0	472	477	550	472	5	28,4
7	7,0	501	504	642	498	3	21,7
8	8,0	523	526	736	519	3	27,5
9	4,0	500	500	343	496	0	108,3
10	5,0	504	505	442	501	1	147,9
11	6,0	513	513	540	508	0	84,9
12	7,0	523	524	637	518	1	59,4
13	8,0	534	535	734	528	1	59,7
14	10,0	564	566	926	557	2	41,1
15	12,0	603	607	1115	596	4	30,6
16	14,0	647	652	1302	639	5	28,1
17	16,0	682	690	1492	676	8	34,4
18	18,0	729	737	1679	721	8	27,7
19	20,0	774	792	1865	774	18	23,7
20	22,0	814	837	2052	817	23	30,2
21	18,0	827	826	1655	810	-1	374,7
22	14,0	811	809	1260	796	-2	205,3
23	10,0	784	783	867	774	-1	121,2
24	6,0	730	728	482	723	-2	51,0
25	4,0	690	687	293	683	-3	32,2
26	2,0	644	639	106	637	-5	26,6

 TRIVELSONDA Perforazioni ed esplorazioni del sottosuolo	PRESSUREMETER TEST					mod MPT	rev 1.0
	BOREHOLE	S12	DEPTH m	7,00	TEST CODE MPT	1	
	CLIENT	FROSIO NEXT		JOB N.		TYPE	SIT
	PROJECT	IMPIANTO SERRA DEL CORVO					
	OBJECT						
	COORDINATES						
	SITE	GRAVINA DI PUGLIA	DATE	10.11.21	PAGE	3/3	

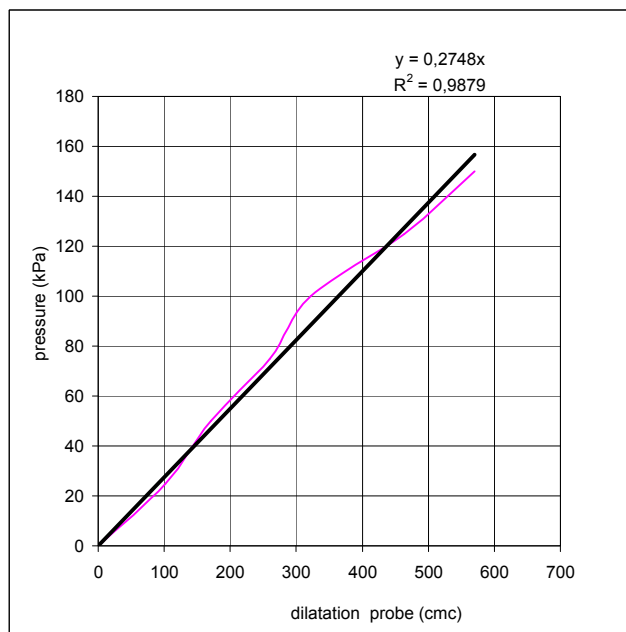
PLACE



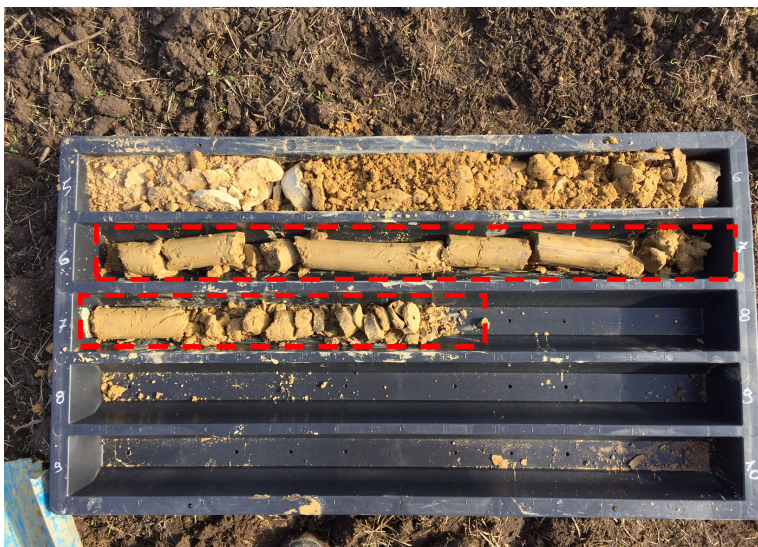
CALIBRATION IN AIR

membrane no cover TELATA MORBIDA kPa/cmc 0,27

Height measure cell (cm) 60,00 VP in. probe vol (cmc) 1812



SOIL TYPE

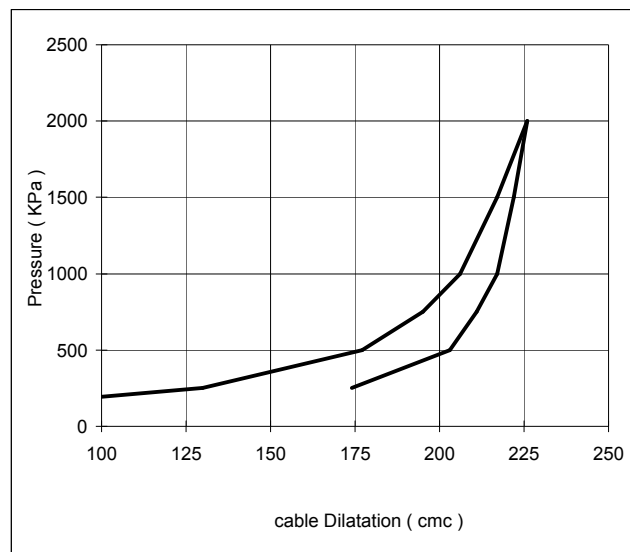


CONFINED CALIBRATION

Lenght cable 60 ϕ confined diameter (cm) 6,5

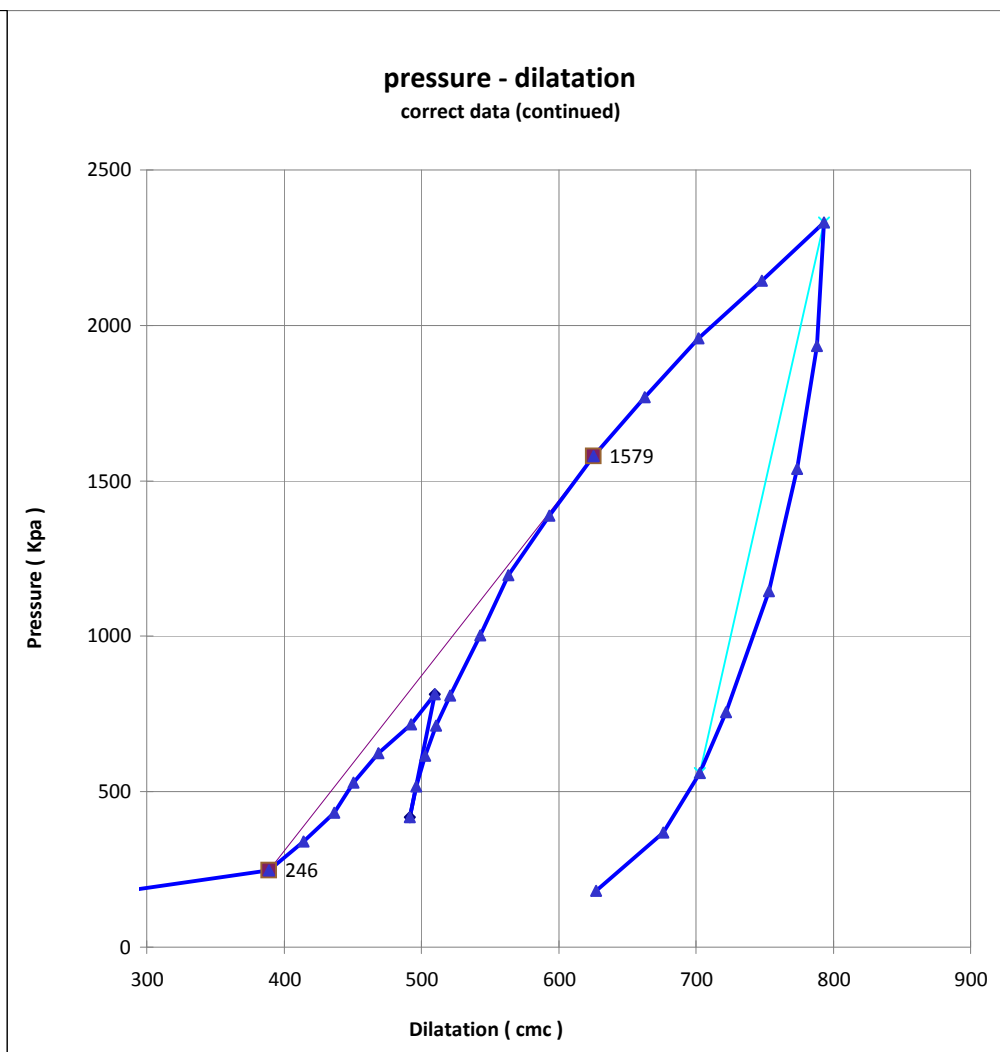
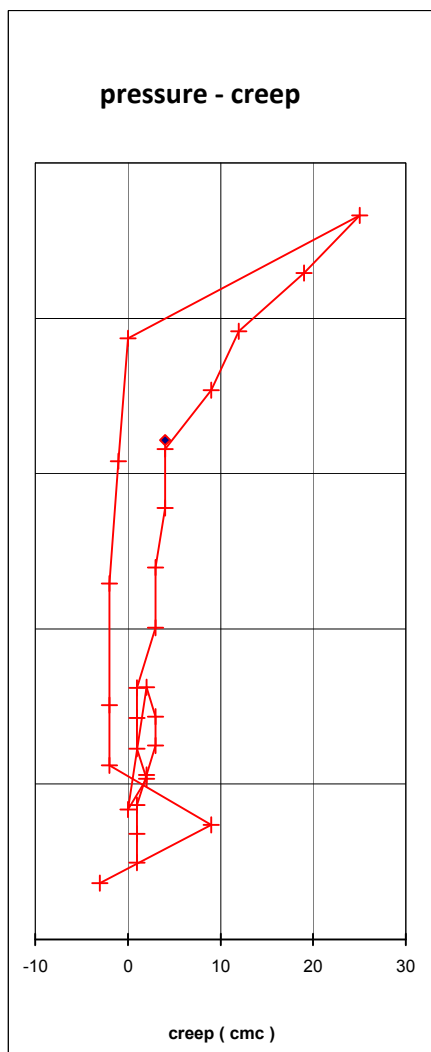
Vi (cmc) 179 Coeff. 20,00 cmc/Mpa first load

tube volume cmc 1991 Coeff. 9,00 cmc/Mpa unload



	PRESSUREMETER TEST					mod MPT	rev 2.0
	BOREHOLE	S12	DEPTH m	14,5	TEST CODE MPT	2	
	CLIENT	FROSIO NEXT				TYPE	SIT
	PROJECT	IMPIANTO SERRA DEL CORVO					
	OBJECT						
	COORDINATES						
	SITE	GRAVINA DI PUGLIA	DATE	10.11.21	PAGE	1/3	

weather _____ inclinazione 90 ° REAL test depth 14,5 m da p.c.
 hydrostatic level (m) > _____ us _____ KPa display by surface (m) 1,00 PP _____ KPA
 γ nat.grav assumed 2,00 t/mc Pressuremeter: APAGEO SEGELM
 σ_v assumed 290 kPa test pocket carotaggio 66 mm probe: tf63
 soil brief description LIMO ARGILLOSO DEB. SABBIOSO CON LIVELLI SABBIOSI pressuremeter modulus **Em** 34,8 MPa
 assumed elasticity modulus **Ey** 51,9 MPa
 mechanical behavior/geological unit _____ Em/P*L 13,99
 assumed cu 274 kPa
 test in according with ASTM D 4719 - 87 (1994) Pressuremeter Testing in Soils Friction angle (coesion effect included) _____ °



	PRESSUREMETER TEST					mod MPT	rev 1.0
	BOREHOLE	S12	DEPTH m	14,50	TEST CODE MPT	2	
	CLIENT	FROSIO NEXT	JOB N.		TYPE	SIT	
	PROJECT	IMPIANTO SERRA DEL CORVO					
	OBJECT						
	COORDINATES						
	SITE	GRAVINA DI PUGLIA	DATE	10.11.21	PAGE	2/3	

DATA PROCESSING

PRESSUREMETER CURVE LIMITS

	FIRST LOAD	LOOP 1	LOOP 2
initial pressure P1 (kPa)	246	812	2332
initial volume pressure V1 (kPa)	389	510	793
initial creep vol C1 (cmc)	1		
final pressure P2 (kPa)	1579	418	561
final volume V2 (kPa)	626	491	703
fin creep (cmc)/ unload Eu (Mpa)	4	131,7	132,8

PHYSIC PROPERTIES

VP probe volume at rest	1812	cmc
VL probe limit volume	2590	cmc
V0 initial volume	389	cmc
1/VL	0,39	10 ⁻³ cmc
v poisson index	0,33	
α sp reologic experimental coeff.	0,26	
α reologic theoric coefficient	0,67	

SYSTEM CORRECTION

inertia cover	
kPa/cmc	0,27
syst. Dilatation	
cmc/Mpa	9,00

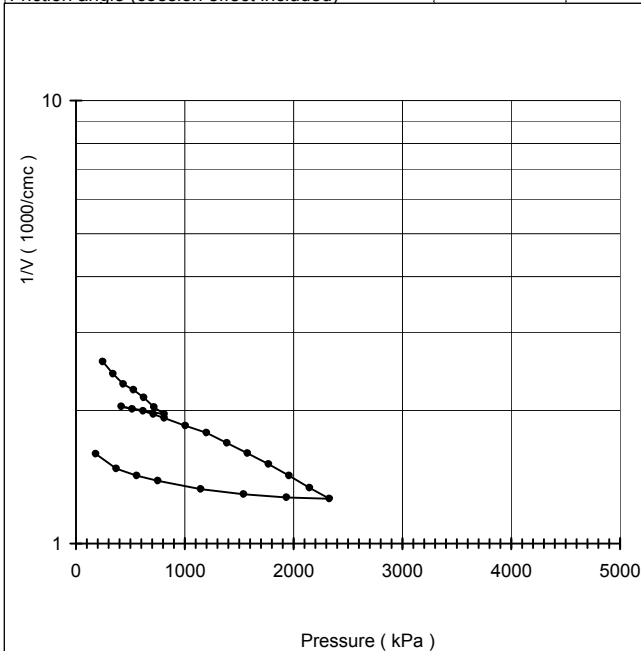
MPa

PRESSUREMETER PARAMETERS

Ko lateral coeff at rest assumed	0,50	
Pho estim. Horiz pres at rest	145	kPa
P0 measured initial pressure	246	kPa
Em pressuremeter modulus	34,8	MPa
Ey min elasticity mod. measured in unload	132,8	MPa
Ey elasticity mod. assumed by C. reologic	51,9	MPa
Pc creep pressure	1608	kPa
P*c net creep pressure	1463	kPa
PL limit pressure by Cassan	2632	kPa
PL limit pressure by Van Vambecke	4318	kPa
PL assumed limit pressure	2632	kPa
P*L assumed net limit pressure	2487	kPa
Em/P*L	13,99	
Ey/P*L	53,42	

ESTIMATED GEOTECHNICAL PARAMETERS

Assumed CU by Amar et Jezequel	274	kPa
Friction angle (coesion effect included)		°

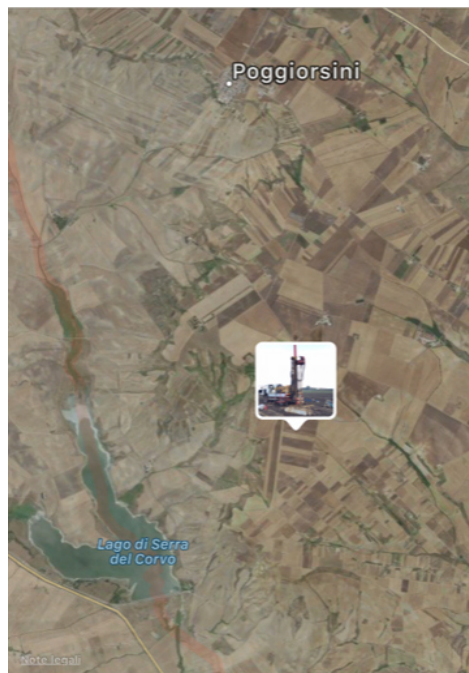


DATA

	Pressure	Vr 30"	Vr 60"	P corr.	V corr.	creep	Modulus
n°	bars	cmc	cmc	kPa	cmc	cmc	MPa
1	0,0	0	0	0	0	0	
2	2,0	390	391	246	389	1	3,4
3	3,0	416	417	339	414	1	21,8
4	4,0	439	440	433	436	1	25,3
5	5,0	453	455	529	451	2	40,8
6	6,0	471	474	624	469	3	31,7
7	7,0	496	499	717	493	3	23,6
8	8,0	515	517	812	510	2	34,2
9	4,0	495	495	418	491	0	131,7
10	5,0	499	501	517	497	2	118,3
11	6,0	507	508	615	503	1	98,9
12	7,0	516	517	712	511	1	74,3
13	8,0	527	528	809	521	1	59,5
14	10,0	549	552	1003	543	3	54,4
15	12,0	571	574	1197	563	3	60,4
16	14,0	602	606	1388	593	4	40,3
17	16,0	636	640	1579	626	4	38,2
18	18,0	670	679	1769	663	9	33,3
19	20,0	708	720	1958	702	12	32,0
20	22,0	749	768	2145	748	19	27,3
21	24,0	790	815	2332	793	25	28,5
22	20,0	806	806	1934	788	0	509,7
23	16,0	789	788	1539	774	-1	189,3
24	12,0	766	764	1146	753	-2	132,2
25	8,0	731	729	755	722	-2	84,4
26	6,0	710	708	561	703	-2	68,0
27	4,0	671	680	368	676	9	48,9
28	2,0	632	629	182	627	-3	24,8

		PRESSUREMETER TEST				mod MPT rev 1.0	
		BOREHOLE	S12	DEPTH m	14,50	TEST CODE MPT	2
CLIENT	FROSIO NEXT			JOB N.		TYPE	SIT
PROJECT	IMPIANTO SERRA DEL CORVO						
OBJECT							
COORDINATES							
SITE	GRAVINA DI PUGLIA	DATE	10.11.21	PAGE	3/3		

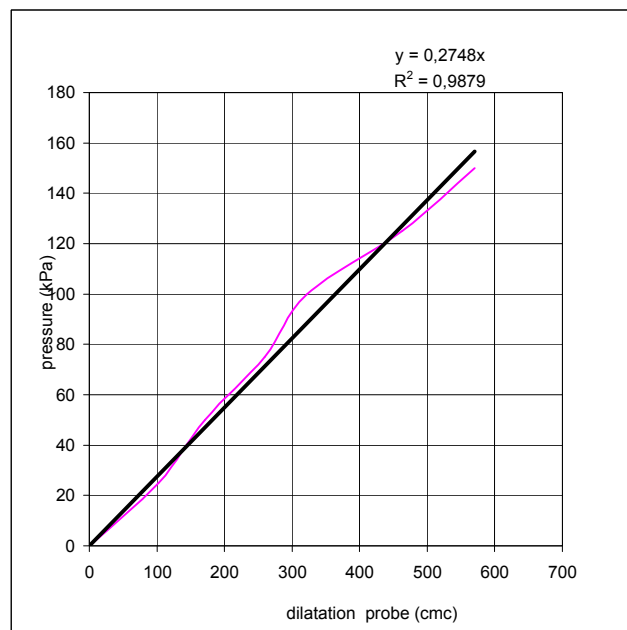
PLACE



CALIBRATION IN AIR

membrane no cover TELATA MORBIDA kPa/cmc 0,27

Height measure cell (cm) 60,00 VP in. probe vol (cmc) 1812



SOIL TYPE



CONFINED CALIBRATION

Lenght cable 60 ϕ confined diameter (cm) 6,5

Vi (cmc) 179 Coeff. 20,00 cmc/Mpa first load

tube volume cmc 1991 Coeff. 9,00 cmc/Mpa unload

